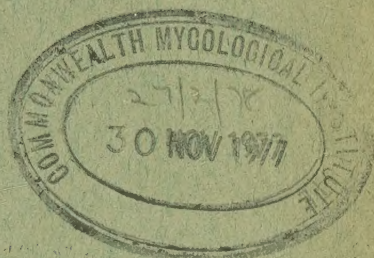


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MAURITIUS

Annual Report
OF THE
Ministry of Agriculture
AND
Natural Resources
for the year 1974



No. 2 of 1977

PRINTED AND PUBLISHED BY
L. CARL ACHILLE, GOVERNMENT PRINTER,
PORT LOUIS, MAURITIUS
FEBRUARY 1977

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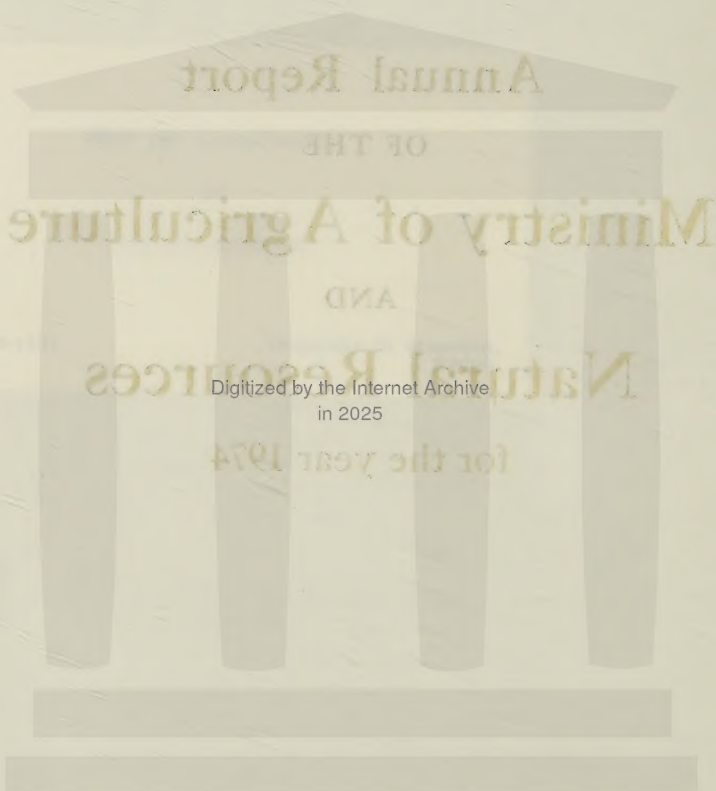
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Annual Report of the Ministry of Agriculture and Natural Resources (Agricultural Services) for the year 1974

I. Introduction

1.01 Nineteen hundred and seventy-four has been a good year for agricultural production in general. The sugar production was 696,786 metric tons compared to the previous record of 1973 of 718,464 metric tons. Climatic conditions were also favourable during harvest resulting in high sucrose content. The average sugar extraction per cent cane of the twenty one mills in operation was 11.68 with 3.68 metric tons of sugar produced per arpent.

1.02. However, despite favourable weather conditions, tea production was 2.6 per cent less than the previous year because of labour problems. A committee was appointed in the middle of the year to examine the problems facing the industry as a whole and the Tea Development Authority in particular. Its recommendations were received towards the end of the year.

1.03 Production of tobacco increased from 658.860 tons in 1973 to 774.890 tons in 1974. Imported tobacco represented nearly 10 per cent of leaf used in cigarette manufacture. To meet increased growing costs, tobacco producers obtained an increase of 30 per cent in the prices of leaves of all grades purchased by the Tobacco Board.

1.04 Development of the livestock industry was given high priority. To intensify research, a feedlot was constructed at Richelieu Experiment Station, capable of holding 512 head of cattle for assessing the value of sugar cane as an energy source and of by products of sugar manufacture. When the cane was fed either after the removal of the rind with a derinding machine, received for the purpose from U.N.D.P., or the whole cane was chipped using a chipper manufactured locally, the latter proved almost as good.

1.05 A committee was appointed to look into the quality of the local milk and milk products and to establish norms for same with a view to framing appropriate legislation. Such norms have been established for fresh cow milk and pasteurized milk. A survey was at the same time carried out covering the whole island to assess the quality of fresh milk being sold on the market at different times of the year. The results indicated that there was much room for improvement.

1.06 The stable fly *Stomoxys Nigra Macquart* is a serious pest of our livestock population in the wettest regions of the island whereas *Stomoxys Calcitrans* L., although widely distributed in the drier coastal regions has been fairly successfully controlled by the introduction of a number of parasites during the years 1966 to 1972. Intensive study is presently undertaken in the ecology, breeding and feeding habits of the *Stomoxys nigra*. It is hoped to decrease the fly population, which reaches pest proportion in the summer months, by a combination of chemical control and biological control so that eventually eradication can be contemplated by a mass release of sterilized males for which mass rearing techniques of the insect are being investigated.

1.07 A more recent effort at diversification is sericulture. Varieties of mulberry have been introduced from different sources, including India and Vietnam, in addition to the fairly large number of varieties existing already in the country. As reported in previous years, sericulture, with the strains of silkworm introduced from India, has been showing good promise of success.

1.08 Irrigation Projects especially in the drier Northern and Western Districts have a most important role in maximising production per unit area. The Pilot Project near Plaine des Papayes in the North which covers 230 arpents is making good progress: the planters of the area have grouped themselves into a cooperative society and employ their own staff to carry out irrigation. The work is closely supervised by the technical staff of the Ministry. The difference in field between the irrigated sugar cane fields in the Project and the unirrigated fields outside the project was 18 tons per arpent, almost 90 per cent more. The irrigation of the whole Northern Plain, covering some 14,000 acres, can now be contemplated. Design works in connection with the execution of the contracts are well advanced. At the same time, search for underground water for irrigation purposes outside the two Project schemes have been undertaken in the South East and the North. Despite the increased cost of materials and equipments, a number of irrigation projects using underground water are proving themselves viable specially since the improvement in the sugar prices.

1.09 A large number of vacancies in the grade of Scientific Officers, Agronomy, Horticulture and Pathology having been filled, it has been possible to intensify research in foodcrops.

1.10 With limited staff in the Extension Service, maximum contact is being established using the *mass media*—Television and Radio talks—meetings with farmers, demonstrations on farmers' lands regarding rational fertilizer use, the monthly issue of Farming News which is widely circulated and advisory leaflets on the most important crops and livestock of which 3,000 were printed and distributed. Attention was concentrated on crop diversification: half of the group meetings were in connection with crops other than sugar cane, in particular potato, onion, garlic, maize, groundnut and tea.

1.11 Extension work on livestock has been initiated with the appointment of an Agricultural Superintendent. It is expected that the four posts of Technical Officer (Livestock-Extension) will be filled in the course of the following year. In the meantime, the Agricultural Superintendent has contracted cowkeepers in groups and had discussions with them on cow management, poultry keeping and goat and rabbit rearing. Youths of both sexes, the professional and amateur farmers of to-morrow, have been encouraged to group themselves in agricultural youth clubs of which there now are 100, including 10 in Rodrigues. A special wing of the Extension Service looks after them.

1.12 In view of the liberal use being made in Mauritius of a wide range of insecticides, fungicides and weedicides the necessity has long been felt for investigating pesticide residue levels on foodcrops and vegetables offered for sale. This work was planned as far back as 1967 but could not be pursued in a systematic manner owing to staff shortage. A Scientific Officer is now assigned to this project. A preliminary survey has indicated that generally the situation is not too alarming: not much pesticide was present on a wide range of samples analysed. It is proposed to equip the Chemistry Division with more sophisticated equipment capable of detecting residue levels of less than 1 part per million.

1.13 Rodrigues suffered severely from drought considered to be one of the worst in the history of the island. It resulted in a marked reduction in the livestock population and in the local production of foodstuffs. It has not been possible to reinforce the technical staff which consisted of two Senior Technical Officers. However, senior officers of the Ministry paid frequent visits to advise on their respective fields of specialization viz. the Chief Agricultural Officer, the Principal Agricultural Officer (Research), the Divisional Scientific Officer (Entomology), the Divisional Scientific Officer (Agronomy), the Divisional Scientific Officer (Chemistry) and a Scientific Officer (Horticulture). The decreased availability of maize was met by an increased dependence on imported rice and flour. Fertilizers were distributed free to planters who however could not make effective use of them because of the drought conditions prevailing. The farmers were given relief terracing work and a total of 400 acres were terraced, others were employed on making or repairing access roads, planting trees as windbreaks, building dams and laying pipelines of which 30,000 feet were laid.

1.14 A number of important agricultural commodities are to-day guaranteed a minimum price considered remunerative to the producer and reasonable to the consumer. These are potato, onion, garlic, rice and maize. With a view to offering still greater stability to the producer's income it is considered desirable to establish a crop and livestock insurance scheme in Mauritius and Rodrigues to offset loss of revenue due to cyclone, drought and other uncertainties. A committee has been set up for the purpose of studying the establishment of such a scheme.

II. Boards and Committees

2.01 The Permanent Secretary or his representative served on the following Boards and Committees:

- Agricultural Marketing Board
- Board of Agriculture, Fisheries and Natural Resources
- Board of Examiners for the Registration of Agricultural Chemists
- Cane Release Committee
- Central Water Board
- Comité de Collaboration Agricole Maurice-Reunion-Madagascar-Comores
- Foodcrops Insurance Committee
- Irrigation Committee
- Institute of Education Council
- Land Settlement Committee
- Man and the Biosphere Advisory Committee
- Mauritius College of the Air
- Mauritius Sugar Industry Research Institute Executive Board
- Mauritius Sugar Industry Research Institute Advisory Committee
- Mauritius Sugar Syndicate
- Northern Plains Irrigation Project Immediate Works Programme Executive Committee
- Rose Belle Sugar Estate Board
- Royal Botanical Gardens Advisory Committee
- Small Scale Irrigation Project Committee
- Sugar Industry Reserve Fund Committee
- Sugar Millers Development Fund Committee
- Sugar Planters Development Fund Committee
- Sugar Insurance Fund Board
- Sugar Millers Rehabilitation Fund Committee
- Sugar Planters Mechanical Pool Corporation Board
- Sugar Planters Rehabilitation Fund Committee
- Tea Control Board
- Tea Development Authority
- Tea Manufacture (Sugar Millers) Limited Board
- Tobacco Board
- UNESCO Committee
- University of Mauritius Senate
- University of Mauritius Council

III. Boards of Agriculture, Fisheries and Natural Resources

3.1 The Board functions under Ordinance No. 29 of 1957.

3.2 The following advisory committees were set up for specific purposes :

(a) The Land Settlement Committee

(b) The Cane Release Committee

(c) The Irrigation Committee

3.3 The Board met once to approve the recommendations of the Cane Release Committee.

3.4 No meeting of the Land Settlement Committee was held during the year.

3.5 The Cane Release Committee met three times during the year. The variety M. 377/56 was recommended for reinclusion on the approved list of varieties and two new varieties M 356/53 and B 51129 were recommended for release.

3.6 The Irrigation Committee met regularly each month. It was concerned with the use of water for irrigation purposes, the repairs to the Magenta Canal to reduce losses and the allocation of irrigation water to water users depending on the supply situation in the reservoirs.

IV. Comité de Collaboration Agricole — Maurice — Reunion — Madagascar

4.01 The twenty-second Conference of the Committee was held in Mauritius from the 19th to the 26th November, 1974. Five delegates from Reunion, 2 from Comores and 6 delegates from Mauritius attended the Conference. Several scientific papers were presented and visits to Sugar Estates, Mauritius Sugar Industry Research Institute and Experimental Stations of the Ministry of Agriculture, N.R. and Environment were organized. The Committee established the programme of activities for the year 1975. It was also decided to include the Comores as a full member of the Committee.

4.02 Five missions in all, two from Ministry of agriculture, N.R. and Environment and three from the Mauritius Sugar Industry Research Institute visited Reunion island under the auspices of the Committee.

V. Cane Planters' and Millers' Arbitration and Control Board

HEAD OF DIVISION: A. A. AUMERALLY, GENERAL MANAGER

5.01 The Sale of Canes (Control) Ordinance No. 18 of 1964 governing the Arbitration and Control Board was repealed and replaced by "The Cane Planters and Milers Arbitration and Control Board Act (No. 46 of 1973)".

5.02 The executive machinery of the Board was run as a division of the Ministry of Agriculture and Natural Resources and the Environment.

MEETING OF THE BOARD

5.03 The Board held 19 meetings during the year as follows:

- 3 meetings in connection with the assessment of sugar to planters;
- 4 meetings in connection with the protests against assessment of sugar;
- 2 meetings in connection with the protests against road rates;
- 12 meetings in connection with change of factory areas, redelimitation of factory areas, core sampling, bagasse and scums, automatic weighbridges.

CANE TESTING

5.04 The cane supplied by 263 planters or group of planters and by 123 Estate sections belonging to miller-planters were tested separately. The total number of tests carried out was 34,280.

ASSESSMENT OF SUGAR

5.05 Following the publication of the final assessment of sugar to planters for the 1973 crop, 6 cooperative credit societies and 3 groups of planters lodged protests against the awards made by the Board. Following the hearing of the protests, the Board maintained its previous assessment in all cases.

TRANSPORT COSTS

5.06 The Committee of accountants set up to report on the determination of the Road Rates submitted their report which was approved by the Board. The schedule giving the maximum rate claimable by millers for the transport of planters' cane from the various outlying weighbridges to the factory in all factory areas was issued in October, 1974. Millers' claims were limited to a maximum of 4 miles. Planters' claims were 0.32 cs per ton per mile for transport undertaken by them over and above 4 miles.

DELIMITATION OF FACTORY AREAS

5.07 9 applications for change of factory areas were received by the Board and all of them were rejected. The Board decided to examine the question of redelimitating the boundaries on sugar factories and a sub committee was formed for that purpose.

PERMITS TO MIDDLEMEN

5.08 Permits were issued to 28 middlemen for the crop.

COMPLAINTS AGAINST MIDDLEMEN

5.09 There were 9 complaints made by planters against middlemen. In all cases except one the Board has been able to settle the disputes between the parties. The Board decided to revoke the licence of one middleman who failed to appear before the Board.

CANE CONTRACTS

5.10 There were 10,700 cane contracts registered by the Board, covering some 31,749 planters. The number of planters who failed to enter into contract before the 31st May totalled 495. In 1973 the number was 322.

CANE VARIETIES

5.11 During 1974 the varieties approved for planting were the following:

M 134/32	...	M 351/57
M 31/45	...	M 124/59
M 202/46	...	M 438/59
M 93/48	...	M 377/56
M 99/48	...	Ebene 1/37
M 253/48	...	Ebene 50/47
M 442/51	...	B. 37172
M 409/51	...	B. 37161
M 13/53	...	N. Co. 376
M 13/56	...	S. 17

CONTROL OF WEIGHBRIDGES

5.12 The number of weighbridges in operation was 83. All the weighbridges were tested for accuracy prior to the beginning of the crop.

SURPRISE CHECKS CARRIED OUT AT WEIGHBRIDGES DURING THE CROP

5.13 During the crop, 2,805 surprise checks were carried out and 2,761 vehicles were reweighed. (2,483 lorries and 278 carts).

VI. The Sugar Industry

CROP RESULTS

6.01 The climatic conditions during the 1974 crop were characterised by favourable conditions for the ripening of the sugarcane, and conducive to a record sugar production.

6.02 Hereunder are some of the crop results compared with those of 1973:

	1974	1973
Area cultivated, (arpents) ...	205,431	207,029
Area reaped (arpents) ...	189,296	191,822
Cane produced, metric tons ...	5,963,655	6,242,631
Sugar produced, metric tons ...	696,786	718,464
Tons of cane per arpent (metric) ...	31.5	32.5
Tons of sugar per arpent (metric) ...	3.68	3.75
Yield of sugar per cent cane ...	11.68	11.51
Crushing rate, hourly metric ton s...	111.6	113.7
Crushing rate, daily metric tons ...	2,257	2,310

CANE VARIETIES

6.03 In order of importance, the main varieties making up the 1974 crop were the following: S. 17, M 13/56, M 93/48, M 377/56.

6.04 These varieties accounted for 72 per cent of the crop; the remaining 28 per cent were made up of M 124/59, M 438/59, M 31/46 and other varieties.

QUOTAS AND PRICES

6.05 There were no changes from the previous year, and the negotiated price quota for the calendar year 1974, under the Commonwealth Sugar Agreement, remained at 380,000 long tons part at the price of £ 79 and part at £ 140.

EXPORTS

6.06 The exports of sugar were as follows:

<i>Destination</i>	<i>long tons</i>	
	<i>1974</i>	<i>1973</i>
United Kingdom ...	400,850	380,000
Canada ...	163,585	189,669
U.S.A. ...	39,420	38,600
USSR ...	—	12,200
Iraq ...	22,304	11,368
Iran ...	25,667	12,364
Indonesia ...	5,167	12,402
Sudan ...	12,000	—
Yemen ...	—	4,781
South Vietnam ...	—	12,599
Malaysia ...	—	12,600
Somalia ...	4,921	—
Burundi ...	30	—
Seychelles ...	585	20

6.07 Apart from the sugar exported, there were 33,147 long tons consumed locally.

MOLASSES AND ALCOHOL

6.08 The production of molasses for the crop amounted to 172,797 metric tons. During the calendar year, 169,028 metric tons were exported. About 10,868 tons of molasses were used for the manufacture of rum and various alcoholic products. Alcohol produced amounted to about 2,257,329 litres of pure alcohol, the greater part of which was rum and denatured spirit. A small part was used for the manufacture of vinegar and perfumes. A limited quantity, amounting to 283,537 litres were exported.

VII. The Tea Industry

TEA CONTROL BOARD

7.01 The Tea Control Board has been established under the Tea Industry Control Ordinance (No. 29 of 1959, as subsequently amended) and by proclamation came into force in 1960. Its main function is to regulate the production and marketing of tea. The Board met fifteen times during the year.

PRICE OF GREEN LEAF

7.02 The Minimum Interim Price for the period 1st January, 1974 to 31st December, 1974 was fixed as follows:

January to March 1974	... 28.0 cents/ $\frac{1}{2}$ kg
April to June 1974	... 30.0 cents/ $\frac{1}{2}$ kg
July to September 1974	... 27.5 cents/ $\frac{1}{2}$ kg
October to December 1974	... 28.0 cents/ $\frac{1}{2}$ kg

7.03 The final price of green leaf payable by the different factories for the period 1st July, 1973 to 30th June, 1974 varied from 34.2 cents per half kg to 36.4 cents per half kg.

Production

7.04 Climatic conditions were favourable for the production of tea during the year. However the industry was largely effected by shortage of labour and strikes resulting in a decrease of 2% of the production over the previous year.

Tea Factories

7.05 Eight factories operated during the year. Their production for the last three years are given below:

PRODUCTION OF BLACK TEA BY FACTORIES (1972 TO 1974)

Figures are given in Kilos

Factory	1972	1973	1974
Bois Cheri ...	911,694	750,291	691,125
Corson ...	323,026	269,009	279,820
Dubreuil ...	1,338,249	1,217,067	1,311,135
La Chartreuse ...	946,321	941,110	560,290
La Flora ...	498,661	438,781	453,500
Nouvelle France ...	321,661	189,726	370,793
Pont Colville ...	217,399	183,681	272,854
Tea Investment Ltd. ...	121,184	89,278	43,465
TOTAL ...	4,678,195	4,078,943	3,983,981

7.06 Of the total production, 3,829,964 kgs were sold of which 658,830 kg on the local market.

The quantities shipped to various dstinations were as follows :

DISTRIBUTION OF TEA RELEASE FOR EXPORT IN 1974

Figures are given in Kilos

<i>Factory</i>	<i>Comores</i>	<i>Ireland</i>	<i>Madagascar</i>	<i>Other Countries</i>	<i>Reunion</i>	<i>Seychelles</i>	<i>South Africa</i>	<i>United Kingdom</i>	<i>U.S.A.</i>	<i>Total</i>
Bois Chéri ...	1,451	—	—	—	7,214	—	360,302	2,180	—	371,147
Corson ...	—	15,270	—	34	639	—	132,088	—	—	148,031
Dubreuil ...	—	—	—	—	41	—	1,131,309	176,160	—	1,307,510
La Chartreuse ...	—	—	—	—	—	—	546,245	18,610	—	564,855
La Flora ...	—	—	23,129	—	907	3,683	279,081	45,260	10,080	362,140
Nouvelle France	—	—	136	—	—	—	279,250	94,920	—	374,306
Pont Colville ...	4,610	—	2,453	—	131	—	195,490	18,000	—	219,684
Tea Investment Ltd.	—	—	—	—	—	—	28,924	760	—	29,684
TOTAL	6,061	15,270	25,718	34	8,932	3,683	2,951,689	355,890	10,080	3,412,944

PROBLEMS OF THE TEA INDUSTRY

7.07 A Study Group was appointed in June, 1974 to examine the State of the Tea Industry and to make recommendations to the Government on the various problems faced by the Tea Industry. The Study Group was chaired by the Planning Adviser of the Ministry of Economic Planning and Development and comprised officials of the Ministry, Tea Development Authority and representatives of the World Bank and Tea Planters. The recommendations of the Study Group were submitted to the Government in December, 1974.

International Meetings

7.08 The Seventh Session of the Sub-Group of Exporters of the Inter-Governmental Group on Tea was held in Rome from 10th to 14th July, 1974. Mauritius was represented at that meeting by the Minister of Agriculture and Natural Resources and the Environment, Honourable Satcam Boolell who was elected Chairman and the Principal Agriculture Officer, Mr. K. Lutchmeenaraidoo.

VIII. The Tobacco Industry

8.01 The acreage and poundage quota allocated, for required production, to registered producers were as follows:

		<i>Arpents</i>	<i>Kilos</i>
Virginia Flue-cured	...	950	530,000
*New Flue-cured variety SC 66 on an experimental basis	...	13	13,500
Amarello Air-cured	...	330	320,000
TOTAL	...	1,293	863,500

The tobacco production at the Experiment Stations, Ministry of Agriculture, Natural Resources & the Environment remained outside quota allocation.

8.02 The acreage planted and production obtained, compared to previous year were as follows:

		<i>1973</i>		<i>1974</i>	
		<i>Acreage</i>	<i>Yield</i>	<i>Acreage</i>	<i>Yield</i>
		<i>Planted</i>	<i>(Kilos)</i>	<i>Planted</i>	<i>(Kilos)</i>
Virginia Flue-cured	...	785	397,471	959	488,617
Amarello Air-cured	...	282	261,389	317	286,273
TOTAL	...	1,067	658,860	1,276	774,890

8.03 The conventional planting season for Virginia and Amarello Air-cured tobacco is between February and April and the second season for planting Virginia Flue-cured tobacco is from July to mid september.

* The new Flue-cured variety was issued to selected producers beyond their quota allocation.

8.04 Variations in regional weather conditions affected crops in producing localities respectively. Heavy rains in March caused damage to seed beds in localities of Flacq. Fair weather prevailed during transplanting stage in the 1st season. There was a number of well grown crops of both types of tobacco. Several producers of Virginia tobacco equipped with overhead irrigation facilities achieved excellent results. There were some casual heavy rains at reaping stage in the 1st season.

8.05 Virginia tobacco mostly grown in rotation with canes, because of delayed harvest of canes on lands earmarked for tobacco which precluded timely land preparation, was planted late by some producers in the second season. There was low rainfall in September and October.

INSECT PESTS AND DISEASES

8.06 Leaf eating caterpillars (*Heliothis*) were the main pests. In the second season cutworms (*Spodoptera*) mainly in the localities of Flacq district caused heavy damage to newly planted fields resulting mostly in uneven stand. The control measures adopted were hand-picking, spray with approved insecticides, Methomyl (lannate) or Azodrin for leaf eating caterpillars and handpicking and application of bait for cutworms.

8.07 Some mosaic diseases were found in Virginia Flue-cured and Amerello Air-cured tobacco. Few cases of Bacterial wilt were also reported on Amerallo tobacco.

YIELDS AND RETURNS

		<i>Average Yield/Arpent</i>	
		<i>1973</i>	<i>1974</i>
		<i>Kilos</i>	<i>Kilos</i>
Virginia Flue-cured	...	441,000	514,000
Amerello Air-cured	...	927,000	900,000
		<i>Average Return/Arpent</i>	
		<i>1973</i>	<i>1974</i>
		<i>Rupees</i>	<i>Rupees</i>
Virginia Flue-cured	...	4,155	5,868
Amerello Air-cured	...	3,808	5,031
		<i>Average Value/Kilo</i>	
		<i>1973</i>	<i>1974</i>
		<i>Rupees</i>	<i>Rupees</i>
Virgina Flue-cured	...	9:42	11:41
Amerello Air-cured	...	4:11	5:56

8.08 There was a further increase of 30 per cent in the prices of leaf tobacco for all grades for the crop year.

8.09 The quality of Virginia Flue-cured tobacco was inferior and that of Amerello Air-cured tobacco was superior to that of the previous year.

		<i>Percentage of Bright and Medium Grades</i>	
		<i>1973</i>	<i>1974</i>
Flue-cured	...	87	79
Air-cured	...	30	35

1974

LOCAL MANUFACTURE

8.10 The Manufacturers purchases and usings of domestic and imported leaf were as follows:

1974-Purchases

	<i>Domestic Leaf Kilos</i>	<i>Imported Leaf Kilos</i>	<i>Total Kilos</i>	<i>% Total Imp</i>	<i>C.I.F. Value per kilo</i>	
					<i>Imported Rs</i>	<i>Domestic Rs</i>
B.A.T. Co. Mts. Ltd. ...	506,008	74,662	580,670	12:86		9:84
A.T.C. Mts. Ltd. ...	169,495	5,468	174,963	3:13		6:13
TOTAL ...	675,503	80,130	755,633	10:60	21:55	8:91

1974-Usings

	<i>Domestic Kilos</i>	<i>Imported Kilos</i>	<i>Total Kilos</i>	<i>% Total Imp</i>
B.A.T. Co. Mts. Ltd. ...	531,543	71,558	603,101	11:86
A.T.C. Ltd. ...	192,848	5,391	198,239	2:72
TOTAL ...	724,391	76,949	801,340	9:6

8.11 The percentage of imported leaf used in manufacture increased by 3.4 per cent in 1974 compared with 1973 as illustrated in the following table:

	1973	1974
% imported	6.2	9.6

8.12 The average C.I.F. value of Imported Virginia leaf was Rs 21.55 per kilo compared with Rs 11.06 per kilo for Domestic Virginia leaf. The average value of Amerello Air-cured was Rs 5.59 per kilo.

8.13 Imports of leaf and cigarettes for the last two years are tabulated below:

		<i>1973</i>		<i>1974</i>	
		<i>Kilos</i>	<i>Value Rs</i>	<i>Kilos</i>	<i>Value Rs</i>
*Cigarettes	...	12,658	391,599	12,804	429,871
<i>Leaf</i>					
U.S.A.	...	46,173	936,495	114,358	2,643,212
Other Sources	...	4,598	43,693	15,097	147,088
Total leaf	...	50,771	980,188	129,455	2,790,300
GRAND TOTAL	...	63,429	1,371,777	142,259	3,220,171

8.14 Comparatively with last year usings of domestic and imported leaf have increased by kgs 47,147 and kgs 32,106 respectively; a net increase of kgs 79,253.

*Imported Cigarettes are mainly for use by H.M.S. Mauritius and as Ships' Stores.

IX. Agricultural Division

HEAD OF DIVISION: A. L. OWADALLY, DIVISIONAL SCIENTIFIC
OFFICER, AGRONOMY

SCIENTIFIC OFFICER: N. GOVINDEN

Tobacco (Nicotiana tabacum L.)

Variety Trials:

9.01 The objective of these trials is the replacement of the local flue-cured variety Yellow Mammoth by higher yielding disease resistant imported varieties with better leaf quality. This year the comparison of performances was done at Richelieu Experiment Station. The trials included flue-cured virginian varieties Kutsaga E1 and Kutsaga E2 introduced from Rhodesia, N.C. 95 and S.C. 66 from U.S.A. and the popular local variety Yellow Mammoth.

9.02 In the first tobacco season—January to July—heavy rains and strong winds delayed maturity and caused the leaves to cure badly. The mean yield of the experiment was 2,332 kg cured leaves per hectare but there was no significant difference between the yields of the varieties. In the second season—July to December—however N.C. 95 and S.C. 66 gave about 20 per cent higher yields than Yellow Mammoth.

9.03 The leaf quality, expressed as rupees per kilo of cured leaves, was low in the first season; and the two Rhodesian varieties had the best leaf quality. In the second season N.C. 95 had a better leaf quality than S.C. 66.

9.04 The gross returns were significantly different in the first season but not in the second. The mean gross returns in the first season was Rs 13,553 per hectare. Moreover Yellow Mammoth gave lower returns than N.C. 95, Kutsaga E1 and Kutsaga E2.

9.05 In both seasons the two American varieties were found to have lower rootknot nematode infection levels than the two Rhodesian varieties. In both seasons Yellow Mammoth had intermediate levels.

9.06 Infection by black shank disease was more common on the Rhodesian varieties than on the American varieties in the first season. No assessment was carried out in the second season as the disease did not occur.

9.07 In general the results obtained this year have confirmed previous findings. The two American varieties N.C. 95 and S.C. 66 are superior to Yellow Mammoth whereas the Two Rhodesian varieties did not warrant further studies. N.C. 95 and S.C. 66 have consequently been released for commercial planting.

9.8 The series of variety trials with these varieties has been completed. The five new introductions from U.S.A. presently in quarantine will be tested as from next year.

Fertilizer Trials

9.9 The 3×3 factorial experiment that was started at Richelieu Experiment Station on S.C. 66 in 1972 was completed in June, 1974. The treatments were:

N₁ : 25 kg. N/ha; P₁ : 90 kg. P₂O₅/ha and K₁ : 120 kg K₂O/ha;
 N₂ : 25 " " P₂ : 180 kg. " and K₂ : 240 kg "

9.10 Yield response to N. and P. were slightly positive but not significant, while no response to K was observed. There were no response of leaf to quality N., P. and K. It was concluded that the present levels of P. and K. were adequate.

9.11 In the second season a new trial was started to look into the problem of Nitrogen fertilization more closely. Five levels of N along with levels of P and a basal dose of K. were used.

The treatments were:

N₁ : 20 kg N/ha; P : 90 kg P₂ O₅/ha
 N₂ : 25 " P₂ : 180 kg "
 N₃ : 30 "
 N₄ : 35 "
 N₅ : 40 "
 and K : 120 kg K₂ O/ha

9.12 There were no response of yield, leaf quality and gross returns to P. There was a significant positive response of yield to N. The responses of leaf quality and gross returns to N. were not significant.

9.13 As a result of these trials the recommendations of 30-40 kg N/ha; 75-90 kg P₂O₅/ha and 75-120 kg K₂ O/ha have been maintained. Work on N. fertilization will continue next year.

Tobacco Breeding

9.14 This work started in 1972 and aimed at the improvement of Yellow Mammoth by backcrossing to N.C. 95. It is hoped that root-knot nematode resistance will be transferred from N.C. 95 to Yellow Mammoth.

9.15 In February, 1974 the fifth generation was planted out at Richelieu Experiment Station. Selection was practised on the basis of general vigour, freedom from diseases and from nematode infection. A total of 55 crosses were effected out of which 48 were successful. Seven plants were retained.

9.16 The seeds from these seven selections gave the seven breeding lines that were planted out in October, 1974. The selection criteria included general vigour, leaf number, leaf colour, freedom from diseases and root-knot nematodes. Twenty-eight out of the 33 crosses were successful. Only 4 plants were retained. Their seeds will be sown in 1975 to give the 7th generation. The selected plants will be selfed.

Spacing Trial

9.17 In July 1974 a spacing trial was conducted at Richelieu Experiment Station on N.C. 95. The treatments were 0.8 m, 0.9 m and 1.0 m between the rows and 0.4 m, 0.5 m and 0.6 m within the rows. The plant populations varied from 16,667 to 31,250 plants per hectare. The recommended spacing is 0.6 m $\times$ 0.9 m whereas planters commonly plant at 0.6 m $\times$ 0.75 m.

9.18 No significant differences were found in yield, leaf quality and gross returns. It is recommended that N.C. 95 be planted at 0.6 m $\times$ 0.9 m as for Yellow Mammoth.

Seedrate Trial

9.19 In July, 1974 an experiment was started at Richelieu Experiment Station to study the effects of various sowing rates on the number of seedlings obtained. The following rates were used: 0.054, 0.087, 0.108, 0.135, 0.161, 0.215 g/m² of bed surface. From the results obtained, the following conclusions were drawn:

1. Nearly all the seedlings could be removed in 5 pickings at intervals of 3-4 days starting from one month after sowing even from beds sown to the highest seedrate.
2. The first two pickings from each treatment yielded about the same number of seedlings, viz. 215/m².
3. The three highest rates yielded about the same number of seedlings up to the 4th picking.

9.20 The experiment will be repeated next year. Pending more information it is recommended the rates should be 1-1.5 g/100 ft² or 0.108—0.161 g/m²; and about 20 m² of bed space be sown to provide enough seedlings to plant one hectare.

SCIENTIFIC OFFICER: B. A. SOOLTANGOS

Sugar Cane

9.21 The Agricultural Division started 3 experiments at Richelieu Experiment Station to determine the agronomic practices for the production of Sugar Cane variety S 17 as a potential source of animal feed for milk and meat production.

9.22 In the first experiment, which was planted on the 16th May, the aim was to investigate the effects of different cutting intervals on the total yield of the crop (Stalks and Tops). A randomized-block design with four replicates and 9 treatments was used for the experiment—the treatments being 9 cutting intervals ranging from 4 to 12 months after planting. The variety used was S 17 and the harvest of the first treatment was carried out in September. Subsequent cuts were made in October, November and December. The experiment will be continued for three years.

9.23 The objective of the second experiment was to investigate the effects of different planting dates on the yield and quality of Sugar Cane (Stalks and Tops). The investigation, which comprises a randomized-block design with 4 replicates and 12 treatments, was started in October. Subsequent plantings were done at monthly intervals in November and December. The experiment will be continued in 1975 and will last for 3 years. In all cases the crop will be harvested 12 months after planting.

9.24 The aim of the third experiment, started in May, was to investigate the effects of 4 plant populations and 3 levels of Nitrogen fertilization on the yield of sugarcane (stalks and Tops). A split-plot design with the 3 main treatments being 100,200 and 300 kgs of Nitrogen per hectare, and 4 sub-treatments being 30,000; 36,250; 45,000 and 60,000 cuttings per hectare and having 4 replicates, was used for the experiment. The harvest will be carried out 12 months after planting and the experiments will last for three years.

Grasses

9.25 An experiment to compare the suitability of 8 grass species as a source of fodder was set up in January at Curepipe Experiment Station. A randomized block design with 4 replicates, each having 8 plots was used; a similar experiment was started at Palmar Experiment Station in February. The grasses were harvested twice at Curepipe and twice at Palmar during the year, the harvests being carried out just before flowering. The experiment will continue for 3 years.

Acacia (Leucaena glauca)

9.26 An experiment to investigate the effects of cutting height on acacia yield, comprising a randomized block design with 4 replicates and 5 treatments, was started in January at Reduit Experiment Station. The Guatemala variety was used and the cutting heights of 30, 45, 60, 75 and 90cm above ground level. The first harvest was done in October. The experiment will continue for 4 to 5 years.

Legumes

9.27 At Reduit Experiment station growth studies on legumes grown as cover crops in peach and citrus orchards were started in August. 27 plots were chosen across the already existing fields and the first harvest was performed on the 13th August. A further cut was carried out in December. The legumes under study are *Vigna marina*, *Centrosema pubescens*, *Phaseolus atropurpureus*, *Glycine javanica* and *Desmodium intortum*. The trials will continue for at least 2 years.

SCIENTIFIC OFFICER : P. P. VYAPOORY

Soyabean (Glycine max)

9.28 A variety trial was conducted at Pamplémousses Experiment Station from February 22 May/June, 1974. The purpose of the trial was to compare the yield potentials and the agronomic characteristics of five selected varieties imported from the USA and a local variety. The following varieties were compared: Amsoy, Clark, Davis, Harasoy, Improved Pelican and local.

9.29 Variety Improved Pelican gave the highest yield, 2.4 m tons/ha, but was the tallest (70.3 cm) and had a longer crop cycle (91 days). Variety Davis gave the best overall performance with a yield of 2.2 tons/ha, an average height, of 23.2 cm and a crop cycle of 81 days. Harasoy was the lowest yielder (1.0 ton/ha) while the local variety was intermediate with a yield of 1.7 tons/ha.

9.30 The trial will be reparted for two more seasons.

9.31 A spacing trial with the variety, Improved Pelican, to determine the optimum spacing for soyabeans was conducted at the Central Experiment Station, Reduit, from April 11 to July 22. The spacings used were: 50×5 cm, 50×8 cm, 50×10 cm, 50×12.5 cm, 50×16 cm and 50×20 cm.

9.32 The yield figures ranged from 2.43 tons/ha for the 50×8 cm spacing to 2.03 tons/ha for the 50×16 cm spacing but were not significantly different.

9.33 The closer spacings, i.e. the higher population treatments produced higher plants with lesser number of branches and fewer number of pods per plant, while the lower plant populations produced shorter plants with greater number of branches and greater number of pods per plant.

S Dwarf French Bean (Phaseolus vulgaris)

9.34 Five new varieties of dwarf French beans imported from France were put under observational trial at Central Experiment Station in April-May. The varieties were: Contender, Rocquancourt, Fin de Bagnols, Harvester and Coco Early White. The first four varieties are suitable for use as fresh pods. The first three varieties are stringless.

9.35 The growth of all the varieties and the yields were very satisfactory. The yields of fresh pods were: Contender: 17.5 tons/ha, Rocquancourt: 15.4 tons/ha, Fin de Bagnols: 13.5 tons/ha, and Harvester: 12.5 tons/ha. The varieties Contender, Rocquancourt and Fin de Bagnols were ready for harvest after 50 days after from sowing and the harvest period lasted for 15-25 days. Pods were picked every 5 days during the harvesting period. The variety Harvester was a late maturing variety, ready for harvest after 60 days. Pods were picked three times at 5 days interval.

9.36 Variety Coco Early White was harvested for dry grains after 90 days from sowing.

9.37 There were slight incidences of anthracnose, angular leaf spot and rust on all varieties.

Peas (Pisum sativum)

9.38 A variety trial to compare the seed yields of four varieties of peas was carried out at Plaisance Experiment Station from May to August. The varieties were: Ajax, Chinese, Greenfeast and local.

9.39 The local variety was the highest yielder: 1.64 m tons/ha (seeds at 30 per cent DM). Ajax yielded 1.367 tons/ha, Greenfeast: 1.23 tons/ha and Chinese: 1.06 tons/ha. The seed yield figures of the four varieties were significantly different among themselves at 1 per cent level.

9.40 All varieties suffered from pod-borer attack. There was also a high incidence of leaf spot and stem rot caused by *Ascochyta pisi*.

Rice (Oryza sativa L)

9.41 One variety trial and three fertilizer trials were carried out at FUEL (Queen Victoria) during the two seasons January to June and July to December.

Variety Trial

9.42 The purpose of this trial was to compare the paddy yields of the following six varieties of rice: IR 532-208 (control), 63-83, IR532-9319 IR 532-9334, IR 665-6291 and IR 665-6292.

9.43 The yield figures showed no significant difference between varieties for both seasons. The yield of the control variety IR 532-208 was 7.48 m tons/ha for the first season and 11.49 tons/ha for the second season.

Fertiliser trials

9.44 The first fertiliser trial was set up to determine the optimum dose of nitrogen application when phosphorus was applied at a non-limiting level and potassium at a basal dose for rice variety IR 532-208.

9.45 The plots received a basal dose of potassium at the rate of 50 kg K_2O /ha and a non-limiting dose of phosphorus at the rate of 250 kg P_2O_5 /ha. Nitrogen was applied at the following doses T_0 : 0, T_1 : 50, T_2 : 100, T_3 : 150, T_4 : 200 kg N/ha.

9.46 In the first season trial, grain yields from treatments T_2 , T_3 and T_4 were significantly different (at 5 per cent level) from the yield of the control and there was no significant difference from the yields of treatment T_1 and the control.

9.47 In the second season, grain yields from treatments T_2 , T_3 , T_4 , T_5 were significantly different at (1per cent level) from that of the control. The yield from the control was 9.56 m tons/ha and the yield form other treatment averaged 11.40 m tons/ha.

9.48 The objective of the second fertilizer trial was to determine the optimum dose of nitrogen when potassium was non-limiting and phosphorus basal for variety IR 532-208.

9.49 The plots received phosphorus at the rate of 50 kg P_2O_5 /ha and potassium at the rate of 250 kg K_2O /ha. Nitrogen was applied at the following doses T_1 : 0, T_2 : : 50, T_3 : 100, T_4 ,: 150, T_5 : 200 kg N/ha.

9.50 In the first season yields from treatments T_2 , T_3 , T_4 , T_5 were significantly higher (at 5 per cent level) than the yield from the control T_1 , but were not significantly different among themselves. In the second season, there was no significant difference between the treatments.

9.51 The objective of the third fertilizer trial was to determine the optimum dose of Nitrogen application when phosphorus and potassium were both non-limiting.

9.52 The plots received phosphorus at the rate of 250 kg P_2O_5 /ha and potassium at the rate of 200 kg K_2O /ha. Nitrogen was applied at the following doses: T_1 : 0, T_2 : 50, T_3 : 100, T_4 : 150, T_5 : 200 kg N/ha.

9.53 No significant difference was obtained between the treatments in the first season. In the second season, the yield figures from treatments T_2 , T_3 , T_4 , T_5 were significantly higher than yield from control, but was not significantly different between themselves.

SCIENTIFIC OFFICER: M. RAMTOHUL

Onion (Allium cepa L.)

9.54 A factorial fertilizer trial on onion March setts of the local variety was carried out in April 1974 at Palmar Experiment Station. The treatments were three levels of K_2O viz:

1. 0 kg K_2O /ha
2. 40 kg K_2O /ha and
3. 80 kg K_2O /ha and 4 levels of N from ammonium sulphate viz:
 1. 0 kg N/ha
 2. 30 kg N/ha
 3. 60 kg N/ha and

4. 90 kg N/ha. There was no significant difference in the yield of bulbs between the treatments.

9.55 A number of onion cultivars were tested at Palmar Experiment Station for their yield potential and susceptibility to diseases. The cultivars were Awahia, Egyptian Improved, Texas Early Grano, Spanish Yellow Globe Early and Spanish Sweet Yellow Globe Late. None of the above cultivars was found promising for our region.

Garlic (Allium Sativum L.)

9.56 A fertilizer trial on garlic from Rodrigues was conducted at Plaisance Experiment Station to study the effects of four levels of Nitrogen at the rates of 25 kg N/ha, 50 kg N/ha, 75 kg N/ha and 100 kg N/ha on the yield of bulbs. There was no significant difference in the yield of bulbs between the treatments.

9.57 The following cultivars of garlic were improved and grown in multiplication and observation plots at Central Experiment Station.

			<i>Country of Origin</i>
1. Feng Shan Sel No. 1	...	...	Taiwan
2. Feng Shan Sel No. 2	...	...	Taiwan
3. Egyptian garlic	...	...	Egypt
4. Large segmented yellow	...	...	India
5. Variety No. 2	...	...	India
6. Variety No. 3	...	...	India
7. Variety No. 4	...	...	India
8. Variety No. 5	...	...	India
9. Variety No. 6	...	...	India
10. Variety No. 7	...	...	India
11. Variety No. 8	...	...	India
12. Variety No. 9	...	...	India
13. Variety No. 56-4	...	...	India

9.58 So far the cultivars Feng Shan Sel no. 1, Feng Shan Sel no. 2 and large Segmental Yellow have been found promising.

Ginger (Zingiber officinale Roscoe)

9.59 A spacing trial on ginger at Plaisance E.S. included the treatments 9 in $\times$ 9 in, 12 $\times$ 12 in, 15" $\times$ 15" and 18" $\times$ 18" in a randomized block design with five replicates. The results showed that the treatment 15" $\times$ 15" gave the highest yield of rhizomes.

9.60 A fertilizer trial on ginger to compare the treatments 0, 20, 40, 60, and 80 kg of N/arpent proved that there was no significant difference in yield of rhizomes between the treatments.

Carrot (Dacus carota)

9.61 A trial to compare the yield, quality of roots and to determine the optimum time of harvest of three varieties of carrots, was carried out at Barkly E.S. The varieties were Chantenay (local), Algerian Sweet and De La Halle. The variety Chantenay gave low yields and roots of poor quality whereas Algerian Sweet was found to be very high yielding and early maturing but its roots were of inferior quality. The variety De La Halle appeared to be the best with uniform roots of very good quality. It can be harvested at 85-95 days from the time of sowing in order to obtain optimum yields.

Cabbage (Brassica oleracea L)

9.62 Two imported varieties of cabbage, viz. Charleston Wakefield and Copenhagen Market were compared to the local variety at Central E.S. The variety Copenhagen Market gave the highest yield of marketable heads which were harvest at 85-95 days after sowing. The local variety was intermediate between Copenhagen Market and Charleston Wakefield in the yield of marketable heads but was late maturing. With the exception of the local variety none of the other varieties flowered in our climatic conditions.

Cauliflower—Summer variety

9.63 Seeds from selected plants of the summer variety of cauliflower, HSI-SHU early were planted at Barkly E.S. to assess the yield potential and the quality of the curd. This variety has a short crop cycle of 95-100 days and can be grown to produce heads in the summer months particularly from December to March when the supply of cauliflower of the local variety is rare or not available in the markets. The calculated marketable yield of curds was about 12 tons/ha and the quality of the produce as assessed by the staff of the Agricultural Services was found to be fairly good. The only drawback of this variety is that it is rather susceptible to *Fusarium* wilt and to bacterial soft rot.

Table beet (Beta vulgaris)

9.64 The yield of two imported varieties of table beet, namely Egyptian Dark Red Flat and Detroit Globe Improved, was compared to that of the local variety at Barkly E.S. The roots of all three varieties were harvested at 85 days from the time of sowing. The variety Detroit Globe Improved gave the highest yield, 23.50 tons/ha and produced globular roots with a regular deep crimson colour. The roots of Egyptian Dark Red Flat and Local formed internal concentric rings or light-coloured zones. Many plants of the Local variety had already initiated the flower stalks whereas two plants had bolted prior to harvest. The varieties Detroit Globe Improved and Egyptian Dark Red Flat did not bolt at all in the field.

SCIENTIFIC OFFICER: H. ROJA

Tea (Thea sinensis)

9.65 Experiments on tea are in progress at Wooton Experiment Station. These include nine experiments of varying nature (fertiliser, tipping, heights, pruning heights, pruning time, clonal selection and grafting).

9.66 Cleft graftings were carried out at Wooton nursery and at Reduit. During the year 1974, 485 grafts were tried, out of which 129 were scions from Reunion Island, 83 South African scions and the rest were VPIH. The Reunion ones were grafted at Reduit and the percentage of survival is low (13 out of 120). Of the Malawian scions, 12 grafted at Reduit and the remainder at Wooton. The survival is comparatively higher (36 out of 83) in the South African scions than in the Reunion ones. It is interesting to note that the grafts were carried out at different time of the year from January to December monthwise. May-June showed better result as compared to the other time of the year. December-January were the least.

9.67 Clonal selection cuttings from clones from Fields 6A and 1A have undergone rooting trial from 29th April to 3rd May and on 23rd May respectively. Obviously, the result was poor as a long period of drought prevailed during experimentation. The appropriate time is November—December. The result showed rooting less than 40 percent on the average. Field 3 and field 6A were pruned in May 1974 for rooting trials in December 1974 but Cyclone Gervaise had spoilt the trial on beds. New selection were done in field 4. Initially 2500 bushes were chosen and after pruning and chloroform test which had started on 4th November 1974, 78 were left for rooting trial in 1975.

9.68 Experiments I, VI, VII, VIII and IX are in progress. Experiment I is being conducted with a view to determine the optimum pruning cycle which ranges from 1 to 5 years. The determination of the optimum pruning height is being investigated in experiments VI and VIII. The objective of Experiment VII is to find out the optimum month of prune in a year. Experiment IX deals with the problem of optimum tipping height of a tea bush. Experiments II, III, VA and X deal with fertilizer applications at various levels, compositions and time. Experiment III which deals with rate of nitrogen at various levels (150, 200, 250, 300, 350 kg N/acre) will enter a second three year cycle in June 1975. In experiment VII, which objective is to determine the effect of NPK application in the year of prune followed by the application of N only in the subsequent year prior to next prune as compared to NPK in the year of prune followed by application of NPK in subsequent year and prior to next prune. 3 new blocks had been added on 21st September 1974 bringing the total number of blocks to 7. Experiments X which aims at determining the optimum rate of N application in relation to yield and the point at which economic response from higher dosage of nitrogen is not available has had two new blocks added in September 1974 bringing the number of replicates to 6 in this experiment. Furthermore in Experiment IX which is to determine the optimum tipping height, one more block was added in 1974, this experiment now has 5 blocks of 4 treatments each.

SCIENTIFIC OFFICER: I. RAJKOMAR

Citrus

9.69 (a) The rootstock/scion compatibility trial with 4 orange varieties: Pera Hamlin, Navel and Valencia late grafted on 7 rootstocks: Rangur Lime, Troyer Citrange, Rusk Citrange, Morton Citrange, Trifoliate Orange, Cleopatra mandarin and Sunlu tangerine introduced by Dr. S. Morera in 67 was continued at Barkly E.S. Rangpur Lime is the only promising rootstock. The only plants showing normal growth are those which have Rangpur lime as rootstock. All other plants show poor growth and many of them have died.

9.70 The Chemistry Division carried out tests to detect any trace of greening on plants showing normal growth. Budwood taken from plants showing no sign of greening was grafted on Florida Rough Lemon (no other rootstock being available) with the view to obtaining plants to fill the blank places in the orchard.

9.71 The stock/scion compatibility experiment with four mandarin varieties—Fagan, Empress, Djeroek Garoet and Djeroek/Kopreok—grafted on seven rootstock was continued at Richelieu E.S. The plants suffered considerably from water stress in the drought period. Some of the plants flowered for the first time.

Strawberry

9.72 A variety trial was laid down at Central Experiment Station. A randomized block design was used with 6 treatments and 6 replicates. The varieties were 1-4, 1-8, Cambrige Rearguard, Local, Fresno and Tioga.

The experiment was planted on 14th May 1974 and the fruits were harvested from 30th August to 16th November. As irrigation water was not available during the second half of the experiment the yield was considerably reduced. There was no significant difference between the yield of the six varieties but the quality was significantly different—Tioga and Fresno were found to be superior to the other four varieties.

Crapes

9.73 A rootstock/scion compatibility experiment with the following treatments:

- (1) variety 'Napoleon Chesselas' grafted on Couderc B13
- (2) variety 'Napoleon Chesselas' grafted on Isabelle Barkly
- (3) variety 'Napoleon Chesselas' grafted on Isabelle Vacoas
- (4) variety 'Napoleon Chesselas' grafted on its own roots.

was laid down at Richlieu Experiment Station in May 1974.

9.74 Similar experiments were started at Curepipe E.S. and Plaisance E.S. in December.

Soil Regeneration Experiments

9.75 Experiments to compare basalt dust and calcium silicate slag as soil amendments were continued in 1974.

9.76 An experiment set in a randomized block design with four replicates and five treatments was started in November 1972, at Curepipe E.S. The treatments were:

- (1) 7.5 tons/ha of calcium silicate slag
- (2) 15 tons/ha of calcium silicate slag
- (3) 187 tons/ha of basalt dirt
- (4) 375 tons/ha of basalt dust
- (5) control

9.77 Three cuts were taken from the experiments in 1974. There was a significant difference in yield of *Sataria* between the control and anyone of the remaining treatments but there was no significant difference in yield between any two of the four treatments (1), (2), (3) and (4).

9.78 Leaf area index measurements to determine any difference in photosynthetic ability showed no significant difference between any two of the five treatments.

9.79 The same experiment was repeated on two other crops—peas and table beet. No significant difference in yield of produce was observed between any two treatments.

9.80 Another experiment with the same treatments as above was carried out at Richelieu E.S. on a low humic latosol (Richelieu Family) type of soil on a crop of groundnut. No significant differences in yield was observed between the different treatments.

X. Animal Production Division

HEAD OF DIVISION: J. A. C. DELAITRE, DIVISIONAL SCIENTIFIC OFFICER
Staff

10.01 The staffing of the Animal Production Division during the year 1974 was as follows:

- (a) 1 Divisional Scientific Officer
- (b) 3 Scientific Officers
- (c) 3 Technical Officers
- (d) 1 Field Assistant

10.02 During the year a new Dairy Chemistry Division was created Dr. R. Preston continued to act as Consultant to the Animal Production Division. The work of the A.P.D. centred on research work on nutrition of cattle. The D.S.O. continued (i) to be in charge of the formulation of rations for the livestock feed factory (ii) to advise the Extension Service through a S.O. posted permanently in that service (iii) to sit as member of a Committee set up by the Chamber of Agriculture on the development of the Bagasse Molasses feed.

10.03 During the course of the year the D.S.O. made the following visits overseas:

- (i) 1st—5th April—To attend the Conference on Animal feeds of Tropical and Sub-tropical Products Institute—London;
- (ii) August—To assist as member of a delegation in the purchase of cattle for slaughter from Madagascar.

Import of Cattle

10.04 With the assistance of the UNDP, the Ministry imported by boat on 29th March 1974 1,350 head of young cattle (6-15 months of age) from New Zealand. These were kept in quarantine at Palmar Livestock Breeding Station until the end of April 1974. The A.P.D. advised on the construction of sheds, feeding and drinking troughs and the formulation of the feed rations. The breed and sex classification of the cattle were:

<i>Males</i>		<i>Females</i>	
<i>Breed</i>	<i>No.</i>	<i>Breed</i>	<i>No.</i>
Hereford X Friesian	228	Friesian	353
Friesian X Jersey		Friesian—Jersey	
Friesian ...	116	Hereford X Friesian	300
Charolais X Jersey ...	2	Hereford X Jersey	
		Hereford X Angus	351
		Hereford X Shorthorn	
Total Males ...	346	Total Females ...	1,004

The average weight of the animals at time of landing was about 150 kg/hd.

10.05 At Richelieu Experiment Station was constructed a feedlot to house about 500 head of cattle. A tanker fitted with pump for effluent disposal and a C_4 cane derinder were purchased with UNDP assistance. A locally manufactured cane chipper was put in operation as well.

10.06 In May, 1974, 512 head of cattle (160 males and 352 females) were transferred from Palmar Livestock Breeding Station to Richelieu Experiment Station.

10.07 The C_4 derinder suffered constant breakdowns and the byproducts cane rind and tops proved to be much of a waste. When the whole sugar cane was chopped and fed, the feed intake of the animals was found to drop from 25.17 kg/head/day to 14.2 kg/head/day.

10.08 Hereunder is a table giving some results of analyses of sugar cane parts expressed as % of Dry Matter:

TABLE—CHEMICAL COMPOSITION OF DIFFERENT PARTS OF SUGAR CANE

Composition % Sugar cane part	Dried Matter %	Fibre	Sulphur	Crude Protein (N $\times$ 66.25)	Ash	Crude Fat	(a) Reducing Sugars	(b) Sucrose	(c) Total (a+b)=c
Derinded Stalk ...	22.2	45.9	0.19	1.35	3.10	0.19	8.1	37.9	46.0
Sugar cane rind ...	39.1	69.9	0.25	3.20	1.87	1.04	2.5	21.1	23.0
Sugar cane tops ...	26.9	56.9	0.40	2.71	5.28	0.84	2.5	24.3	26.8

10.09 The New Zealand cattle at Richelieu Station received from 6th May—25th June, 1974 a ration made up as follows:

- (1) Derinded cane comfith ad lib.
- (2) A 15 per cent solution of ureated molasses sprinkled on the derinded cane at the rate of 5 per cent vol/wt.
- (3) 200 grams of fish meal with 1 kg of ground maize per animal.
- (4) A mixture of Sodium Chloride and Dicalcium Phosphate provided ad lib.

10.10 Due to the constant break down of the derinder the feeding was erratic. However the 512 animals gained an average 434 grams/head/day.

10.11 During period 25th June to 14th August, 1974 the New Zealand cattle received comfith made up of clean cane without tops; to which 20 per cent cane tops chipped separately was added. The other component parts of the daily ration being same as above. Once more due to constant break down of the derinded the feeding was erratic and the animals gained 360.8 gms/head/day.

10.12 During a third period (8th August—25th November, 1974=109 days) when the feed supply was more regular and a chipper was available to chip whole cane whenever the derinder broke down, the results were as follows:

No. of Bulls ...	159
Live wt. gain/day (grams ...)	952 grams/head/day
Intake of fresh cane kg/day ...	22.9
Intake of molasses kg/day ...	.82
Intake of urea gms/day ...	229
Intake of maize kg/day ...	1.0
Intake of fish meal gms/day ...	300
Proportion of stalk plus tops ...	36.8 %
Chipped whole cane ...	63.8 %

160 heifers on the same treatment gained 758 gms/head/day.

SUGAR CANE FOR MILK PRODUCTION AND RESTRICTED SUCKLING

10.13 Some of the immature heifers imported from New Zealand arrived pregnant. They received the same feed as the previous fattening animals (chipped or derinded cane ad libitum, 1 kg daily of ground maize, 300 grams of fish meal and molasses at the rate of 50 c.c./kg cane).

10.14 Milking was done once daily and the calf allowed to suckle after milking for a limited period of 30 minutes.

10.15 The calves were on restricted suckling and four others on ad lib suckling.

	<i>Restricted suckling</i>	<i>Ad lib suckling</i>
Initial wt. kg ...	22.2	25.2
Feed wt. kg ...	35.7	37.7
Daily gain grams/day ...	200	321

10.16 The milking cows were gaining 226 gms/day on the standard ration whilst other heifers on the same ration were gaining 758 gms/head/day.

10.17 These immature heifers apparently of beef origin did not exceed a maximum production of 4 litres/head/day during the 1st month of lactation. This exceedingly low production is partially attributed to nutritional deficiencies with respect to the use of sugar cane for milk production and more research on this aspect is required.

EFFECT OF LEVEL OF FISH MEAL SUPPLEMENT ON PERFORMANCE OF GROWING HEIFERS FED DERINDED OR CHIPPED WHOLE CANE

Materials and Method

10.18 The two main factors investigated were:

(a) derinded v/s chipped whole cane

(b) fish meal levels of 250, 300, 350, 400, 450, 500 gms daily.

10.19 Preliminary results for the 1st three months of the experiment are set out hereunder.

<i>Level of fish meal gms/ day</i>	<i>Weight gain Derinded</i>	<i>gms/day Chipped</i>	<i>Intake of cane Derin- ded</i>	<i>kg/day Chipped</i>
250	524	474	22.0	22.2
300	549	523	22.1	22.2
350	557	529	19.9	22.3
400	539	431	22.1	22.6
450	535	511	22.1	22.9
500	549	486	22.2	22.4
Mean Value	542	492	21.7	22.4

10.20 Performance appears to be 10 per cent better on derinded than on chipped cane, with no effect as to level of fish meal. This lack of response to animal protein has been noted elsewhere in Brazil and in Mexico. However the better performance on derinded rather than on the chipped cane is the opposite to findings elsewhere. It is believe that this is because the derinded treatment was favoured by having material of a higher sugar content.

Grazing time on acacia (Leucoena Leucocephala) with or without supplementary groundnut meal on performance of bulls fattened on molasses/urea

10.21 Two levels of intake of acacia were tested (by varying the length of grazing time as replacement for ground nut cake).

Materials and Method

10.22 A factorial design was used in which the factors were:

(a) Grazing on accacia for 3 or 8 hours daily.

(b) Presence or absence of supplementary groundnut cake (300 gms/day).

The rest of the ration was ad libitum molasses/urea (2% and minerals).

10.23 The experiment was carried out on the estate of Mr. R. Osman at Belle Isle. It began on 16.8.73 and lasted 336 days. Groups of 7 bulls mostly Creoles but with some Zebu were allocated to each treatment combination.

10.24 The mean value for live weight change and feed intake are as follows:

		3 hour grazing		8 hour grazing	
		Unsupple- mented	300 gms ground nut cake	Unsupple- mented	300 gms ground nut cake
Av. Initial live wt. kgs ...	...	175	175	175	175
Av. Final live wt. kgs ...	...	307	329	369	357
Daily gain kgs ...	...	0.393	0.458	0.577	0.542
Molasses/urea kg/day ...	...	5.0	5.0	5.0	5.0
Molasses/urea conversion kg/live wt. gain ...	...	12.7	10.9	8.67	9.23
Feed cost/kg gain in Rs ...	...	3.1	3.48	2.11	2.94

Cost of raw materials (Molasses Rs 250/m ton, Ground nut cake Rs 1,500/m ton and urea at Rs 1,500/m ton).

10.25 Analysis of variance for effects of grazing time and ground nut supplement in daily liveweight gain (grams):

Source of variation	Degrees of freedom	Near square	F. value	Signifi- cance
Time ...	1	108,470	21.6	P < .01
Groundnut ...	1	293	—	—
Interaction ...	1	5,473	—	—
Error ...	27	3,937	—	—

10.26 Rate of live weight was significantly greater for 8 hours compared with 3 hour grazing time but there was no response to ground nut cake nor any evidence of interaction. The superior protein value of acacia forage in this trial over ground nut cake confirms previous findings. No molasses toxicity was observed during the trial.

Different levels of meat as a supplement to molasses/urea for bulls grazing on acacia (Leucoena Leucocephala)

10.27 *Materials and Method*

(a) Meat meal at levels of 0,200 and 400 gms/day.

(b) Average initial weight 89.4 and 149 kgs respectively.

10.28 There was one group of 7 or 8 Zebu bulls on each treatment combination. Feeding was molasses containing 2 per cent urea ad libitum, the appropriate level of meat meal and approximately 3 hour grazing daily on acacia. The trial was carried out at St. Antoine Sugar Estate and lasted 308 days.

10.29 Mean value for change in live weight gain and molasses intake :

		Daily gain in live wt. gms	Molasses/urea conversion
<i>Average Initial wt. 89 Kgs</i>			
No supplement	...	258	16.4
200 gms meat meal	...	378	13.3
400 gms meat meal	...	322	15.5
<i>Average Initial wt. 149 Kgs</i>			
No supplement	...	259	19.3
200 gms meat meal	...	434	13.3
400 gms meat meal	...	408	14.0

10.30 Analysis of variance for effects of initial weight and supplementation with meat meal.

Source of variation	Deegrees of freedom	Mean square	F. Test	Significance
Meat meal	2	58.826	8.28	P < .05
Initial wt.	1	7.753	—	—
Interaction	2	10.084	—	—
Error	29	7.107	—	—

10.31 Once again no response was observed to different level of supplements. Initial live weight did not affect live weight gain and there was no interaction. The level of performance on the unsupplemented treatment was lower than at Belle Isle despite identical diet composition. This would tend to indicate a lower genetic potential for growth in the cattle at St. Antoine which were almost entirely Zebu whilst at Belle Isle the breed was mainly dairy type creole bulls.

Acacia (Leucoena Leucocephala) as sole forage and protein source for fattening bulls fed molasses/urea

10.32 Interesting results had been obtained when intake of acacia was controlled by time of grazing. This experiment aimed at finding out optimum daily intake of acacia for molasses urea feeding techniques.

Materials and Method

10.33 A production function design was used to measure response to levels of freshly cut acacia forage of 0, 0.5, 1.0, 2.0, 3.0 per cent of live weight.

10.34 The rest of the ration being ad lib molasses containing 2 per cent urea and minerals—it was intended to use bagasse as a nutritionally inert forage, however it was not readily consumed and was replaced by elephant grass at 1 per cent of live weight.

10.35 Four individually fed Zebu bulls were allocated to each acacia level. The trial was carried out at Richelieu Agricultural Station and lasted 206 days.

Results and discussions

10.36 Mean values for live weight change and feed intake:

		<i>Level of acacia % of live weight</i>				
		0	0.50	1.0	2.0	3.0
Average initial wt. kgs	...	136	147	157	133	142
Average final wt. kgs	...	186	209	213	218	247
Average daily gain (gms)	...	242	299	274	415	493

Feed Intake Kg/day

Molasses	...	3.83	4.41	4.08	4.25	4.36
Urea	...	.077	.088	.082	.085	.087
Acacia	...	1.16*	.61	1.28	2.54	3.98

10.37 There was a linear response in live weight gain according to increasing level of acacia. The indication from the data is that the optimum level may be beyond 3 per cent of body weight. A similar inference can be drawn from the experiments at Belle Isle where 8 hour grazing on acacia gave better growth than 3 hours. There is also an indication that molasses voluntary intake increased slightly with increasing % of acacia fed and when the animals on control are fed elephant grass. At the maximum level of acacia fed the estimated intake of protein was some 150 gms daily which is comparable with that usually provided when supplements such as fish meal and ground nut meal are used in conjunction with molasses/urea diets.

*Raw and steam treated bagasses as roughage sources for bulls
fattening on molasses/urea diets*

10.38 Raw bagasse can be improved in both palatability and nutritive value by steam cooking it under pressure at 200 psi for 10 minutes (d'Espaignet et al 1974).

10.39 This experiment aimed at evaluating both raw and cooked bagasse as sources of roughage in the molasses/ urea fattening programme.

Materials and Method

10.40 The four treatments in a random block design were (a) raw bagasse (b) cooked bagasse and (c) fresh forage.

10.41 There were two groups of five zebu bulls on treatment. Feeding was molasses/urea 2 per cent *ad libitum* and 200 grams fish meal and 1 kg maize per head per day + minerals *ad lib.*, bagasse was given *ad libitum* and fresh forage at 3 per cent of live weight. The experiment was carried at Palmar Livestock Breeding Station and lasted 316 days.

*Wt. of elephant grass instead of acacia. This group also received trace element and vitamins A, D and E.

Results and Discussions

10.42 Mean values for live weight gain and feed intake:

		<i>Raw bagasse</i>	<i>Steam treated bagasse</i>	<i>Green forage</i>
Average Initial live wt. kgs	...	176	195	210
Average final live wt. kgs	...	271	298	367
Daily gain	...	.336	.337	.496
Feed intake kg/day :				
Molasses ...	...	5.2	5.2	5.8
Urea ...	...	.127	.128	.144
Bagasse ...	...	.51	.78	10.
Fish Meal	...	.2	.2	.2
Maize Meal	...	1.0	1.0	1.0
Salt ..	...	.025	.025	.025
Dicalcium Phosphate	...	.025	.025	.025

1043. Analysis of variance for gain (gms/day):

<i>Source of variation</i>	<i>Degrees of freedom</i>	<i>Mean square</i>	<i>F. value</i>	<i>Significance</i>
Treatment	... 2	78797	6.08	P<0.05
Replicate	... 1	54267	—	—
Interaction	... 2	6370	—	—
Error	... 20	12950	—	—

10.44 There was no differences in rate of gain as between raw and steam treated bagasse but both were inferior to forage, the advantage of the fresh forage may be because it provided additional protein as well as roughage. The use of bagasse as roughage may warrant additional natural protein. This aspect is to be investigated.

MOLASSES FOR MILK PRODUCTION

The nutritive value of molasses bagasse mixture as a production ration for milking cows

10.45 The original molasses/bagasse pith mixture formulated by the Milk and Meat Project did not give satisfactory results.

Milk yields were low and considerable loss in weight resulted when fed to milch cows at the rate of 600 grams per litre of milk produced, fodder being fed ad lib.

10.46 It was therefore decided to investigate the relative value of this feed under controlled condition and in comparison with grass alone and the usual cereal based cow feed as negative and positive control treatments respectively.

10.47 Opportunity was also taken to include a modified molasses bagasse feed with additional maize grain and a treatment in which only ground nut cake was given.

Materials and Method

10.48 A change over design was used to compare the following treatments:

- (a) grass alone
- (b) standard cereal based cow feed at 500 gms/litre of milk
- (c) Molasses bagasse mixture (MBg at 600 gms/litre of milk)
- (d) Molasses bagasse mixture with additional maize MB mg at 600 gms/litre of milk
- (e) Molasses bagasse mixture with maize but without ground nut cake MBm at 600 gms/litre of milk
- (f) Ground nut cake fed at 200 gms/litre of milk

10.49 The composition of the mixtures is as follows:

		<i>MB</i> <i>g</i>	<i>MB</i> <i>mg</i>	<i>MB</i> <i>m</i>	<i>Cow feed</i> <i>(cereal)</i>
Molasses	...	73.4	52.4	58.4	25.0
Bagasse pith dried	...	14.	10.	12.	—
Ground nut cake	...	8.	8.	—	10.
Urea	...	2.5	2.5	2.5	—
Vit. A & D	...	.1	.1	.1	.1
Dicalcium Phosphate	...	1.	1.	1.	1.5
Salt (NaCl)	...	1.	1.	1.	1.
Maize grain (ground)	...	—	25.	25.	32.4
Cotton Seed cake	...	—	—	—	20.
Rice Bran	...	—	—	—	10.
		100.0	100.0	100.0	100.0

10.50 There were 10 cows on each treatment and the experimental arrangement was :

$$S_1 \longrightarrow E \longrightarrow S_2 \quad \text{where}$$

S_1 = Standardization period days 1 to 30

E = Experimentation period days 41 to 100

S_2 = Standardization period days 111 to 140
days 31 to 40, 101 to 110 were for gradual change over of rations.

10.51 All cows received fresh grass ad lib in addition to the experimental treatments.

The cows were hand milked twice daily.

The cows were mainly creole with some X-bred Friesian and grade Friesians.

Results and discussions

10.52 Mean values for milk yield persistency and live weight change according to treatment.

	S_1 days 1-30	E days 41-100	S_2 days 111-140	Persistency E $S_1 + S_2$	Daily live wt. change during exptal period kgs
Grass alone ...	11.43	6.08	5.12	.74 ^a	— .72 ^a
MB _g ...	10.70	6.78	5.86	.83 ^{ab}	— .31 ^{ab}
MB _{gm} ...	11.62	7.61	6.06	.88 ^{bc}	— .36 ^{ab}
MB _m ...	9.97	6.90	5.76	.88 ^{bc}	.00 ^b
Cow feed ...	10.2	7.65	6.62	1.00 ^c	.00 ^b
Ground nut cake ...	10.2	7.77	6.13	+.95 ^c	+.13 ^b
S. E. ...				— .033	— .17

ab means without common superscript differ at $P < .05$

10.53 Persistency was significantly less for cows receiving grass alone. All molasses/bagasse rations were significantly poorer for persistency than the cereal concentrate.

10.54 Ground nut cake alone gave both good persistency and live weight gains.

10.55 A new trial is being started in which unsaturated oil is being added to a molasses/bagasse mixture as a production ration to milking cows.

MISCELLANEOUS

(a) Bagasse Digester

10.56 During 1974 a bagasse digester funded by U.N.D.P. was being constructed by Cassis Ltd. and installed at Constance Lagaité Sugar Estate. The installation and construction of the Digester had not been completed by the end of the year. This digester will be producing steam heated bagasse to be utilized in feeding trials with cattle.

(b) Sale of Bagasse Molasses Feed

10.57 The staff concerned with the sale of experimental Bagasse/Molasses Feed and the carrying out of field surveys consisted of one Livestock Inspector, one Assistant Livestock Inspector and 12 Livestock Attendant and 12 Feed Distributors.

10.58 The experimental feed continued to be sold in the six concentration zones namely (1) St. Pierre, (2) Montagne Blanche, (3) Vacoas St. Paul, (4) Triolet, (5) Plaisance, (6) Palma Road. The sale of feed for period January to December, 1974 is as follows:

<i>Months</i>	<i>No. of cows receiving feed</i>	<i>Sale of Bagasse/Molasses in kgs</i>	<i>Sale of Modified loose cow feed in kgs</i>
January ...	1,745	58,000	—
February ...	1,901	66,300	—
March ...	1,837	76,600	—
April ...	1,047	1,520	17,625
May ...	1,726	—	29,160
June ...	1,703	—	30,495
July ...	1,856	—	33,975
August ...	1,394	—	22,225
September ...	2,172	63,540	—
October ...	2,135	73,140	—
November ...	2,356	73,760	—
December ...	2,645	73,180	—

10.59 Whenever Bagasse/Molasses feed was not available a modified loose cow feed was provided and both feed received a subsidy of Rs 170 per metric ton throughout the year.

XI. Plant Pathology Division

HEAD OF DIVISION: G. M. LALLMAHOMED,

DIVISIONAL SCIENTIFIC OFFICER

11.01 The Plant Pathology Division is involved in aspects of plant disease research and control. Diseased plant specimens are identified at the Division and appropriate control measures recommended through the Extension Services. Phytosanitary control is exercised at ports of entry and plant material intended for exportation is examined by the Quarantine personnel of the Division.

RESEARCH INVESTIGATIONS

BACTERIAL WILT (*PSEUDOMONAS SOLANACEARUM*) STRAIN VARIATION STUDIES

(G. M. LALLMAHOMED AND N. YERRIGADOO)

11.02 Pathogenicity and pathotype determinations were further performed during the year on tobacco Var. Yellow Mammoth, egg plant Var. Black Beauty and potato Var. Up to Date. Results confirm the existence of Races 1 and 3 of the bacterium in Mauritius. Since egg plant Var. Black Beauty and tobacco are known differential hosts for race 1 isolates and that all isolates were pathogenic to egg plant, it is concluded that all isolates

studied belong to race 1. However, only a few isolates were pathogenic to tobacco indicating that race 1 isolates could be further subdivided into a tobacco strain which is not only highly virulent to tobacco Var-Yellow Mammoth but also to Var-N.C. 95 which is a bacterial wilt resistant variety in the U.S. The race concept has therefore to be reviewed since it is known that race 3 isolates are pathogenic to potato but has limited pathogenicity to tobacco. All isolates were pathogenic to potato.

11.03 Long term rotation experiments have been started at Reduit and Pamplémousses Experiment Stations to study the following aspects:

- (i) The effect of various cropping sequences on the incidence of wilt and to determine the best possible rotation scheme.
- (ii) Virulence of pathotypes under the selection pressure of different cropping systems.

11.04 The incidence of bacterial wilt in the indicated cropping sequence is tabulated on the next page. Figures indicate mean values of wilted plants. Results indicate that the tobacco race present at Pamplémousses Experiment Station is of a highly virulent nature and different from the Reduit one which is weakly pathogenic to tobacco. It appears that continuous cropping under tobacco would probably increase the virulence of the Reduit tobacco isolate to that host. Further experiments are in progress.

Cropping Sequence	Pamplémousses Experiment Station		Cropping Sequence	Reduit P.P. Trial Pilot	
	April- September 1974	October February 1975		November 1973 March 1974	April- September 1974
Tomato—Groundnut (Local) (Shulamit) ...	96.26 ^a	14.9 ^c	Tomato—Tomato	77.3 ^a	100 ^a
Ginger—Potato (Up to Date) ...	2.16 ^g	24.6 ^b	—	—	—
Bean—Tobacco (L. Tom) (Y. Mommoth) ...	7.38 ^f	98.54 ^a	Bean—Bean	0 ^e	2.95 ^e
Tobacco—Bean ...	74.50 ^b	8.28 ^d	Tobacco—Tobacco	15.0 ^c	41.9 ^b
Groundnut—Tomato ...	23.40 ^d	100 ^a	Groundnut—Groundnut	0 ^e	0.41 ^e
Fallow—Potato (Marilyn) ...	—	2.23 ^a	Fallow—Fallow	—	—
Potato—Ginger (Up to Date) ...	58.15 ^c	0 ^f	Potato—Potato (UTD)—(UTD)	49.5 ^b	31.0 ^e
Potato—Follow (Marilyn) ...	15.85 ^e	—	Potato—Potato (Marilyn)—(Marilyn)	3.46 ^d	9.73 ^d
S. E. difference between means	±0.19	±0.08		±0.18	±3.69

Common letters indicate Duncan's Multiple range groupings of crops which do not differ significantly at the 5% probability level.

GINGER AND TURMERIC LEAF BLIGHT—(M. PILLAY AND
G. M. LALLMAHOMED)

TECHNICAL ASSISTANCE M. CHINAPPEN

*Ginger—(Zingiber officinale Roscoe)*11.05 Leaf spot (*Pyricularia* sp.)

The growth in different culture media of the *Pyricularia* sp. obtained from ginger was investigated. Rapid growth and abundant conidia-formation were obtained from yeast-extract agar.

Several sets of potted plants were inoculated with conidial suspensions in the greenhouse. Symptoms very similar to those found in fields of very humid regions (i.e. spots elongated and spindle shaped, markedly water-soaked at first) developed within 5 to 6 days. The fungus was re-isolated from surface-sterilized diseased leaf tissues and the disease was reproduced on re-inoculation of fresh plants, thus establishing formal proof of pathogenicity. Laboratory, greenhouse and field studies are in progress on this pathogen which is believed to be *Pyricularia zingiberi* Nisikado.

A *Fusarium* sp. found associated with diseased ginger rhizomes was isolated but pathogenicity tests were not carried out.

11.06 Turmeric—*Curcuma domestica* Valetton

The *Pyricularia* sp. isolated from turmeric appears to be different from that on ginger both in its morphological and cultural characteristics. Further work is in progress.

TEA NURSERY DISEASES

EFFECT OF CAPTAN ON ROOTING AND DEVELOPMENT OF TEA CUTTINGS

(J. BUCHA AND S. BENIMADHU)

11.07 A seventy per cent successful rooting of planting tea cuttings is considered satisfactory by Tocklai. At Wootton Tea Experiment Station, the success rate has been around 50 per cent for the past few years. In 1973 commercial production of young tea plants was destroyed through failure of proper rooting. Though it was not possible to isolate the causal organism (s), the present report gives the results of an attempted practical solution.

11.08 Eight replicate batches of 100 tea cuttings, planted in 5" × 7" plastic sleeves and protected by a bracken fern cover, were used per treatment. Soil for filling sleeves was amended with:

- (a) triple phosphate
- (b) triple phosphate and captan
- (c) a complex fertilizer (14: 7: 14: 4) and
- (d) the complex fertilizer and captan

11.09 Fertilizer rate and captan rate for 10 baskets of soil were 125 g and 62.5 g respectively. The first treatment was the one routinely used at Wooton Tea Experiment Station and was regarded as the control.

11.10 Three months after planting the tea cuttings, the braken fern cover was progressively removed. Urea (0.5 per cent) was then applied at 2-week intervals. The concentration of the fertilizer was gradually increased at monthly intervals by 0.5 per cent to reach a maximum of 3 per cent.

11.11 The following data were then collected :

- (i) Percentage routine success
- (ii) Number of leaves per plant
- (iii) Height of plants (cm), and
- (iv) Aggregate weight (g) of roots of groups of 5 plants per treatment.

The first and second data were collected 6 months after planting and the last two and after 12 months.

11.12 Soil amendment with captan proved highly beneficial to both rooting and subsequent development of tea cuttings. Except for root production, soil treatment with triple phosphate and captan did not produce results significantly different from those obtained when using the complex fertilizer and captan.

<i>Soil Treatment</i>		<i>% rooting</i>	<i>Leaf Counts per plant</i>	<i>Plant Height (cm)</i>	<i>Aggregate root dry wt. per 5 plants (g)</i>
Triple phos. ...	...	85 ^b	2.0 ^c	21.0 ^c	67.8 ^d
Triple phos.+Captan	...	95.5 ^a	8.4 ^a	59.7 ^a	172.4 ^b
Complex Fertilizer	...	89.8 ^b	3.8 ^b	32.2 ^b	95.4 ^c
Complex Fertilizer+Captan ..	..	96.6 ^a	9.1 ^a	58.5 ^a	290.0 ^a

Letters in common indicate no significance by Duncan Multiple Range Test at the 5 per cent level.

CHEMICAL CONTROL OF PLANT DISEASES

TETRACYCLINE TREATMENT FOR CITRUS GREEDING DISEASE—

D. TOURABALLY AND G. M. LALLMAHOMED

11.13 Symtoms of the greening disease tranmitted by psylla vectors have been known to be suppressed by trunk injections of tetracyclines and a considerable decrease in the incidence of citrus fruit greening has also been achieved in South Africa (Schwarz and Van Vuuren, 1971)*.

11.14 During September and October, 1973, preliminary tetracycline injections were carried out at Reduit and Richelieu. Each plant was injected with 1 litre of 500 ppm tetracycline solution at flush time. Bark samples were tested for the presence of the fluorescent marker gentiosyl glucose before and after treatment. The number of fruits harvested were counted from each treated tree during harvest time. Yields are shown in the table below:

No.	Variety	Yield (No. of fruit)			
		(1971)	(1972)	(1974)	(1974)
		Untreated	Untreated	Treated	Control
516	Navalencia Orange	125	93	276	—
529	Navalencia Orange	429	382	451	—
225	Navel Orange	363	192	372	—
292	Navel Orange	—	399	—	319
17	D. K. Poeten Mandarin	480	662	772	—
517	Navalencia Orange	—	477	—	409
363	Navel Orange	236	184	341	—
314	Navel Orange	351	262	385	—
38	Local Flat Mandarin	743	144	839	—
119	Fagan	—*	—*	1239	—
326	Navel Orange	372	208	318	—

11.15 Results indicate an increasing trend in the number of fruit harvested following a decline during 1972. Bark tests also indicate the absence of the marker substance in treated plants. However Mc Clean (1970*) has reported that this marker was an unreliable indicator of greening injection. Until more is known on the technique of greening detection, the fluorescent marker test has to be relied upon. The next stage in the present experimentation would be to perform tetracycline injections on a larger scale. It is planned to treat about 150 trees in September next at St. Felix, Reduit, Plaisance, Richelieu, Curepipe and Barkly. Bark samples would as usual be tested by the Agricultural Chemistry Division.

FUNGICIDE TRIALS ON BEAN WITH RESPECT TO GREEN POD PRODUCTION—

J. BUCHA AND S. BENIMADHU

11.16 Seeds of "Long Tom" variety were planted, at Barkly Experiment Station on February 1st, 1974, in 6-row plots, 6 m long and replicated 4 times in a randomized block design. The plots were 30 cm. apart and planting distance was about 7.5 cm. At the time of sowing fertilizers were applied in furrows at the following rates:

- (i) Sulphate of ammonia—100 kg/Arp. (80 g. per 6m furrow)
- (ii) Simple superphosphate—250 kg/Arp. (200 g. per 6m furrow)
and
- (iii) Murate of potash—125 kg/Arp. (64 g. per 6m furrow).

*Yield was not recorded during 1971 and 1972.

†Mc Clean A.P.D. 1970. Greening disease of sweet orange: Its transmission in propagative parts and distribution is partially diseased trees. *Phytophylactica* 2: 263—268.

Schwarz, R.E. & S.P. Van Vuuren. 1971. Decrease in fruit greening of sweet orange by trunk injection of tetracyclines. *Plant Dis. Repr.* 55: 747—749.

11.17 Two days after germination Nuvacron was applied three times at the rate of 1 ml/1 at 7-day intervals, as protection against *Melanoagromiza*. A fortnight after sowing, sulphate of ammonia was applied at the rate of 75 kg/Arp. (64 g. per 6m furrow) as topdressing.

11.18 Fungicide and insecticide spraying was initiated on March 1st and continued at 7-day intervals through March. 29. Disease counts on leaflets and pods were made March, 13, the latter then being at the 'Kitchen' stage and yield data, as dry seeds, were taken on April 5, using the middle four rows of each 6-row plot.

11.19 There was a mild attack of rust in all plots but no sign of halo blight was observed either on leaves or pods before the green pods had reached the 'Kitchen' stage. However, after the 'Kitchen' stage all plots were infected with halo blight to the extent of about 20 per cent.

11.20 Results are tabulated below:

Treatment and rate	Mean No. <i>Isariopsis</i> spots/ 25 leaflets or pots		Yield/100 plts in g.
	pots	leaflets	
Benlate 50wp $\frac{1}{2}$ g/l + Nuvacron 1 ml/1	0.75 ^a	47.00 ^a	920.4 ^a
Dithane M 45 80wp 2g/l + Nu- vacron 1 ml/1	4.00 ^b	301.25 ^b	866.2 ^a
Benlate 50wp $\frac{1}{4}$ g/l + Nuvacron 1 ml/1	5.25 ^b	806.50 ^c	776.8 ^a
Benlate 50wp $\frac{1}{4}$ g/l + Dithane m45 80wp 1g/l + Nuvacron 1 ml/1	6.25 ^b	687.00 ^c	871.4 ^a
Nuvacron 1 ml/1	25.75 ^c	1431.25 ^d	782.8 ^a

Letters in common indicate no significance by Duncan Multiple Range Test at the 5 per cent level.

None of the chemicals significantly increase yield. Benlate gave the best protection with respect to *Isariopsis*.

Control of ginger leaf blight—M. Pillay and M. Chinappen

11.21 The effect of some fungicides on the leaf-spot disease of ginger (*Pyricularia* sp.) was evaluated in a field trial consisting of a randomized block design with six replications planted in December, 1973 at Central Experiment Station (Réduit). For each treatment, Dipterex—and Thiram-treated, ginger, seed-pieces were planted at intervals of 10 inches along six furrows 20 feet long and $1\frac{1}{2}$ feet from each other; a 2 feet wide path was left between plots. Fungicides were sprayed at 10-day intervals from end of February (i.e. 2½ months after planting) till end of June. The rhizomes were unearthed in the third week of July. Disease, which appeared only in the untreated control plots towards the end of March, spread rapidly and had killed all plants in these plots by mid-June. Disease severity was not measured but the yield at harvest was taken and statistically worked out.

Treatment	Rate of application	Yield*/Kg green Ginger
Dithane M-45 80 WP + Benlate	1g + 0.5 g/litre respectively	32.000 a
Thiabendazole (42.28%)	1.3 ml/litre	27.718 a b
Macuprax	5 g/litre	23.917 b
Benlate	0.5 g/litre	23.542 b
Control	—	21.917 b
Difolatan 80 WP	2 g/litre	21.000 b

Note: The small letters indicate Duncan's multiple range groupings of treatments which do not differ significantly at the 0.05 level.

11.22 Dithane M-45 in combination with Benlate gave good protection and a significantly higher yield than all other treatments and control. Difolatan was phytotoxic. Macuprax treatment was interrupted for some time through lack of material. Signs of phytotoxicity were already evident at the dosage applied.

ASSESSMENT OF RESISTANCE TO DISEASES G. M. LALLMAHOMED AND D. TOURABALLY

Tobacco

11.23 Newly introduced tobacco varieties were assessed for resistance to black shank and rootknot nematodes in variety trials conducted by the Agronomy Division at Richelieu during two tobacco seasons. (January—May, and July—November, 1974). Black shank infection (*Phytophthora parasitica* Dast. var. *nicotianae* Tucker) was determined by counting the number of infected plants per plot. Root knot nematode (*Meloidogyne* sp.) damage was assessed after the final harvest when plants were uprooted and examined for the degree of root galling according to know infection classification systems (Daulton and Nusbaum, 1961; Zeck, 1971)*. Results are tabulated below:

Variety	Rootknot Disease Index		Black shank (% infected plants) 1st season 1974
	1st Season	2nd Season	
NC 95	11.7 c	18.2 b	0 b
SC 66	16.6 bc	20.3 b	0 b
Kutsaga E ₁ (KE ₁)	34.3 a	49.4 a	2.7 a
Kutsaga E ₂ (KE ₂)	33.6 a	51.7 a	4.0 a
Yellow Mammoth	28.8 ab	47.8 a	0.3 b
L.S.D. 5% level (±)	12.7	7.37	1.7

The small letters indicate Duncan's multiple range groupings of treatments which do not differ significantly.

*Each value is the mean of six replicates

†Daulton, R.A. and Nusbaum, C.J. 1961. The effect of soil temperature on the survival of the rootknot nematodes *Meloidogyne javanica* and *M. hapla*. Nematologica, 6, 280-294 Zeck, W.M. (1971) A rating scheme for field evaluation of root knot nematode infestations. Pflanzenschutz Nachrichten Bayer, 24, 141-144.

11.24 Results indicate that varieties NC 95 and SC 66 were again found to be more resistant to rootknot nematodes than Yellow Mammoth, Kutsaga E₁ and Kutsaga E₂. Moreover, varieties NC 95 and SC 66 proved to be as good as Yellow Mammoth in their resistance to black shank infection. The incidences of black shank in varieties KE₁ and KE₂ were considered to be low but significantly higher than variety Yellow Mammoth.

Onion (Pink root rot disease)—M. Pillay and M. Chinapen

11.25 Several onion varieties which were being tested by the Agronomy Division at Palmar Experiment Station were kept under observation for their susceptibility to pink root rot (*Pyrenochaeta terrestris*). Infection at transplant was assessed, results are tabulated below. No assessment was made at harvest stage, the experiment having been severely affected by drought.

11.26 *Varietal Reaction to Pyrenochaeta terrestris at transplant stage:*

Variety	No. of plants assessed*	Infection Index†
Jaune Valencia ...	1,242	3.25
Jaune Hatif Espagnol ...	669	11.73
Egyptian Ameliore ...	388	14.91
Awahia ...	1,256	17.16
Texas Early Grano ...	1,174	27.60

OCCURRENCE OF DISEASES

Tobacco

11.27 Main diseases of tobacco were mosaic (TMV) and veinbanding (PVY). Damping off disease on seedbeds occurred in a few instances.

Chilly

11.28 Chilly mosaic was unusually severe during the year. In most cases leaves were distorted and plants were stunted. Yield losses could not be assessed.

Eggplant

11.29 The incidence of *Phomopsis* wilt in the crop is becoming alarming. There is no locally available commercial variety which appears tolerant to the disease.

Garlic

11.30 Rust of garlic (*P. Allii*) was prevalent in many localities.

Rice

11.31 False smut (*Ustilaginoiden virens*) of rice was observed for the first time in Mauritius at Mare d'Australia.

* Sown on 10.4.74, transplanted on 7.6.74

† Infection Index = $\frac{\text{Sum of all numerical ratings}}{\text{Total number of plants}} \times \frac{100}{\text{maximum disease category}}$

QUARANTINE SERVICES

11.32 During the year, 530 permits were issued for the importation of plant material. Phytosanitary certificates issued for the exportation of fresh ginger, onion, garlic, groundnuts, cut flowers, ornamentals, fresh fruit and vegetables numbered 3,203. Prior to landing of imported Frozen Animal Products, 391 landing permits were issued on behalf of the Division of Veterinary Services. At the Parcels Post Office, 82 items of plant material were intercepted, 9 were destroyed, 15 were treated and 26 released after presentation of the appropriate phytosanitary certificates and 32 are still awaiting collection.

11.33 Phytosanitary control was exercised during the arrival of 1895 planes and 216 ships. Items of plant and animal material were intercepted and destroyed in 601 instances. Plants introduced into Mauritius and released from Quarantine during the year included the following:

Mulberry cutting varieties:

Dan-Duy-Viet (=Banden × Bantraong); Dan-Ai-Huan (=Japan × Vietnam) from S. Vietnam

Kikuyu grass from Australia.

Tobacco vars. SC 71, Coker 347, SC 72, Speight G 28, Speight G 33 from U.S.A.

Citrus sp. from Tahiti.

Jade Vine from S. Africa.

Sweet potato vars. Julian, Jasper, Centennial from U.S.A.

vars. 69-219; 70-9; 64-285; Leek; Chestnut; White Starch, Kwong Tung, Peking, Little Leaves from China.

Rice vars. CS 6; IR 20; IR 22; Taichung 186; Tai Chung Native (No. 28.588);

Kaoshiung 27 No. 28.584; CS 1 (IR 262—7—1—1—2) No. 28.585; IR 24; IR 8—1310 from Philippines.

XII. Chemistry Division

HEAD OF DIVISION: S. BELCOURT, DIVISIONAL SCIENTIFIC OFFICER

12.01 Analysis of water samples for the camaron hatchery at Trou d'Eau Douce were carried out regularly to check on its composition for larvae rearing. Water from Albion was tested in connection with the location of adequate well sources of fresh water and sea water at proper sites for new multipurpose hatchery. Water samples from prospective land sites were analysed for pond rearing of juvenile camarons to market size adults. The determinations carried out were for pH, hardness and salinity. The pH varied from 6.8 to 7.5, the hardness from 17 to 104 ppm calcium carbonate and the salinity from 25 to 104 ppm. One sample of water from Pamplemousses Garden Pond No. 2 where 12,000 deaths were recorded in December, 1974 was checked for the possible contamination with a pesticide. The presence of DDT was noted.

Soil

12.02 The cane fields of small planters were sampled by the Extension Service before the fields were replanted with a view to making appropriate recommendations regarding fertilizer application. Soil analysis was carried out with a view to obtaining information on pH, N,P,K. The soil status was found to be as follows—

(a) pH

Flacq	Wide variation	4.7 to 8.3
Grand Port ...	Slightly Acid	range of 6
Moka	Acid	4.3 to 5.7
Pamplemousses ...	Slightly Acid	6 to 6.5
Plaines Wilhems ...	Acid	4 to 5.9
Riviere du Rempart	Alkaline	7.3 to 8

(b) Nitrogen

The nitrogen status was found to be high in general, ranging from 0.25 to 0.75 per cent.

(c) Phosphate

This was found to be in general rather low, although some high levels (up to 370 ppm) have been encountered, especially in Flacq.

(d) Potassium

This varied considerably within the same region. Levels as low as 0.14 meq/100g and as high as 2.2 meq/100g have been recorded. In the district of Moka, it was in general very low, in the range of 0.18 to 0.56 meq/100g.

Feeds for animal production

12.03 Various materials received for the preparation of feeds at the Livestock Feed Factory were checked. Local maize was analysed for dry matter. Molasses was analysed for brix. Prepared feeds (100 samples) were analysed for their feeding standards.

12.04 Feeding experiments carried out by the Animal Production Division necessitated regular checks on feed concentrates and other materials likely to be used for feeding purposes. Specific tests for oxalate, tartrate and cyanide were done on (a) voehm seeds (cyanide absent, oxalate and tartrate present) (b) water hyacinth (oxalate and cyanide absent, tartrate present).

12.05 A scum dump was sampled at different stages of decomposition (a) fresh scum (b) scum 5 days old (c) scum decomposed, of black appearance. With the rapid destruction of sugars, a considerable increase in protein was observed 11.9 per cent in the fresh scum and 20.5 per cent in the decomposed material. There was a slight fall of pH from 8.2 to 7.9 and a considerable fall of fatty material from 8.2 per cent to 1.9 per cent.

Tobacco

12.06 The survey on flue cured tobacco leaves of NC 95 and Yellow Mammoth continued for the first and second seasons. For the first season the analysis of nicotine, potassium, sodium, calcium, magnesium and chloride on the dried leaf was made. For the second season, only calcium, magnesium and chloride were analysed.

12.07 Nicotine was found to increase from the bottom of the plant to the top, varying from 1.5 to 3.5 per cent. There was no variation detected with difference in locality or variety.

12.08 Potassium on the contrary was found to decrease from bottom to top, varying from 5 to 1 per cent. The variation was found to be greater than for the previous year.

12.09 Sodium was found to lie in the limits of 0.1 to 0.16 per cent independently of the position of the leaf on the plant.

12.10 Chloride was very high for both varieties and in all localities. At Richelieu, the level varied between 4 and 6 per cent, at Pamplémousses between 3 and 4 per cent, and at St. Julien between 2 and 4 per cent.

Silica

12.11 At Richelieu Experiment Station, in connection with an experiment to compare the effect of silica from basalt dust and from calcium silicate on groundnut, the analysis of groundnut leaves, nuts and shells was carried out after harvest. Each plot was also sampled for the analysis of the soil before planting and after harvest. No significant difference was observed between the control and the various treatments.

12.12 At Curepipe a similar experiment was set up to study the effect of silica uptake by peas and beetroot. No significant difference was observed.

12.13 A similar experiment on setaria at Curepipe Experiment Station continued. After each cut the fodder as well as the soil for each plot were analysed.

Ginger

12.14 The spacing and fertilizer trials carried out for the past two years necessitated the analysis, after harvest, of 20 samples of ginger fingers from each trial. As reported elsewhere, there was no significant difference found in the contents of dry matter, ether extract, ash and fibre. The following variations were noted.

		Percentage of :			
		Dry matter	Et. Extract	Ash	Fiber
Spacing trial	...	22.7-28.5	1.9-2.9	3.4-5.0	4.5- 7.3
Fertilizer trial	...	22.6-30.9	2.6-4.3	4.0-6.4	4.3-10.2

Leguminous Cover Crops

12.15 The growth study at Reduit of 5 varieties of leguminous crops was undertaken by the Agricultural Division. Just before flowering 27 parcels were cut and analysed for dry matter, protein, ash, fibre, calcium and phosphorus. The experiment continues.

Grass

12.16 Eight different grass species used as a source of fodder were under study by the Agricultural Division at Curepipe and Palmar. Samples after each cut were analysed for dry matter, protein and fibre. The experiment continues.

Acacia

12.17 An experiment was set up by the Agricultural Division to investigate the effects of cutting heights on acacia yield. The leaves after the 1st cut in October were analysed for dry matter, protein and fibre. The experiment continues.

Rice

12.18 A fertilizer trial set up on rice at Queen Victoria necessitated the analysis of soil from the plots after harvest. The pH was found to be uniform, varying between 6.6 and 6.8. With high application of potash, the available phosphate of the soil seemed to be low.

12.19 Different levels of phosphate did not seem to have an effect on the absorption of potash. Results do not show a conclusive trend for the absorption of phosphate and potash in relation to different treatments. Residual nitrogen in the soil seemed to be more or less constant at a level of 0.2 per cent.

12.20 Levels of phosphorous and potash found:

		<i>high</i>	<i>low</i>
Phosphorus ppm	...	16-20	10-14
Potassium meq/100g	...	0.3-0.6	0.15-0.3

Scum

12.21 The preservation of sugar cane scum with Formaldehyde and its use as a source of protein and fat.

A Fermentation

Four experiments were set up in order to determine the ideal condition for the preservation of the scum. Known weights of scum were treated with known volumes of formaldehyde. The contents were analysed regularly in order to determine the degree of fermentation. The temperature prevailing in the experiments was 20—25°C.

Experiment I

12.22 The samples contained in beakers were left to ferment open to the atmosphere. The results are shown in Table I.

TABLE I

% of HCHO V/W	0.00	0.25	0.50	0.75	1.00	1.25	2.50
% Fermentation after 10 days...	100.0	100.0	85.1	58.6	49.1	48.1	45.8

Experiment II

12.23 The samples were kept in closed polythene bottles. The volume of air above the scum was limited to 200 ml. The results are shown in Table II.

TABLE II

% of HCHO V/W	...	0.00	0.25	0.50	0.75	1.00	1.25	2.50
% Fermentation after 10 days ...	100.0	87.0	79.3	62.0	40.0	39.5	10.5	

Experiment III

12.24 The samples in beakers were covered with a layer of kerosene $\frac{1}{2}$ cm thick. The results are shown in Table III.

TABLE III

% of HCHO V/W	...	...	0.00	1.25	2.50
% Fermentation after 10 days	...	100.00	42.0	33.07	

Experiment IV

12.25 The beakers containing the samples were kept in a vacuum desiccator. The column of air above the samples being taken as nil. The results are shown in Table IV.

TABLE IV

% of HCHO V/W	...	..	0.00	1.25	2.50
% Fermentation after 10 days	...	100.0	75.5	29.7	

12.26 *Comments*

- (i) Fermentation is reduced with increasing concentration of Formaldehyde but is not stopped even with large concentrations of the latter.
- (ii) All conditions being the same, the % fermentation is lowered when the volume of air over the scum is restricted.
- (iii) The complete exclusion of air from the scum does not stop fermentation.
- (iv) The scum is better preserved when kept in a closed container as in Experiment II.

B. Protein and Crude Fat

12.27 Only the scums in Experiments I and II were analysed for protein and crude fat after a period of sixteen days. The results are shown in table V. The freshly collected scum when analysed gave the following results.

Dry matter	21.5	} % Dry matter
Protein	11.3	
Crude Fat	9.7	
Total Sugars	22.6	

EXPERIMENT I

%HCHO V W	...	0.0	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50
%Fermentation after 16 dys	...	100.0	100.0	91.2	92.6	90.0	88.4	87.7	85.1	72.6	65.1	50.1
%Protein in DM after 16 dys	...	13.2	14.6	13.3	13.9	13.7	13.4	13.0	12.4	11.8	11.3	11.4
%Crude Fat in DM after 16 dys	...	11.56	12.97	11.56	11.51	12.04	11.06	11.10	10.55	9.80	9.95	9.32

EXPERIMENT II

%HCHO V W	...	0.0	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50
%Fermentation after 16 dys	...	100.0	89.4	87.6	86.2	82.8	78.0	46.6	48.0	56.8	43.7	29.4
%Crude Fat in DM after 16 dys	...	12.04	12.00	12.17	10.07	10.47	9.82	9.24	9.81	9.53	9.70	9.19

TABLE V

12.27 Protein

- (i) There is no destruction of protein during fermentation. However, there is a proportional increase in the Protein with increasing fermentation due to destruction of sugar.
- (ii) The proportional increase in protein is more than what would be expected from the destruction of simple sugars. This could be accounted for by the partial degradation of cellulose.

12.28 Crude Fat

- (i) There is no destruction of lipid during fermentation.

12.29 Conclusion

The experimental results show that formaldehyde is not a suitable chemical to prevent fermentation over a long period. Some other chemicals not investigated which could be effective in stopping fermentation are:

- (a) Iodoacetamide
- (b) Magnesium ions as Magnesium sulphate
- (c) Phosphate ions as the sodium or potassium salts.

COMPOSITION OF SUGAR CANE

Use of sugar cane as fodder for cattle

12.30 In connection with the feeding trial at Richelieu Experiment Station, the processed sugar cane was collected from Richelieu once a week and analysed for the following:

- (a) Dry matter
- (b) Crude fibre
- (c) Sulphur
- (d) Crude Protein
- (e) Ether extract
- (f) Ash
- (g) Reducing sugars and
- (h) Sucrose

The three processing plants which were in operation at the station were:

- (a) the Cane derinder
- (b) the cutter
- (c) the chipper

The Cane Derinder

12.32 Most of the samples analysed were from the derinding machine. Initially, the whole cane was passed in the derinder which removed the rind and part of the leaves. The comfith which came out of the derinder contained over 90 per cent pith, the rest consisting of cane leaves and rind. At a later stage only the cane stalk was passed through the derinder and the resulting comfith was free from leaves and contained over 95 per cent pith.

The Chipper

12.33 The chipper was used to process the cane tops.

The Cutter

12.34 The cutter was put into operation whenever the derinding machine was out of order. The whole cane was fed into the machine which chopped the cane but did not grind it.

The processed cane collected from Richelieu was passed into the Jeffco at the Mauritius Sugar Industry Research Institute in order to homogenize the material.

12.35 The results of the analyses expressed on fresh matter basis are shown in the table below.

	D.M.	% Fresh Matter						
		Crude Fibre	Sulphur	Crude Protein	Ash	Ether Extract	Reducing Sugars	Sucrose
Rind from Derinding Machine ...	37.1	24.7	0.09	1.20	0.82	0.46	0.87	8.23
Whole Cane from Chipper ...	30.1	13.2	0.08	1.12	1.24	0.32	1.27	9.19
Cane Tops ...	26.7	16.5	0.10	1.46	1.39	0.26	1.38	3.09
Whole Cane Chipper 6-8 months old ...	21.1	14.7	0.07	0.72	0.80	0.38	1.58	1.35
Confith from Derinding Machine ...	26.4	9.7	0.05	0.59	0.63	0.06	1.21	13.42

PESTICIDES SECTION

SCIENTIFIC OFFICER: L. C. LAM THUON MINE

12.36 The chromogenic spray reagents, 4—methylumbelliferone and 2, 6—Dibromo-p-benzoquinone-4-chlorimine, which were mentioned in recent literature were successfully studied for the detection of an important group of organo-phosphorus compounds and carbamates. A concentration as low as 0.1 p.p.m. of the compound can be identified.

12.37 Azodrin from Barkly Experiment Station was checked for any contamination by other pesticides. It was shown to be identical to the Azodrin obtained from Agricultural Services.

12.38 Liver sample was obtained from Veterinary Division for the determination of organochlorine and organophosphorus pesticides. There was no indication of any pesticide residues.

12.39 Granulated dipterex samples were analysed for any adulteration by local sand. Two spots, corresponding to the local sand, were located.

12.40 Unlabelled sample of pesticide was checked for aldrin. The presence of aldrin was indicated.

12.41 Torbidan was analysed for any aldrin content. The result obtained was negative.

12.42 The following tables show the results of the Pesticide residue analysis in crops collected at various localities at different times of the year.

12.43 Crop: Beans:

Area	Pesticide				Result
Petite Julie ...	Parathion M 50%	...	...	...	Negative
Petite Julie ...	Dipterex	...	...	...	Negative
Crève Coeur ...	Dipterex, Diarecron, Morestan	...	...	...	Negative
Curepipe E. S. ...	Azodrin	...	...	...	Negative
Mapou ...	Dipterex 80%	...	...	...	Negative
Mapou ...	Lannate	...	...	...	Negative
Richelieu E. S. ...	Lannate, benlate	...	...	...	Negative

12.44 Crop: *Brède de Chine*:

Area	Pesticides	Result
Barkly E. S. ...	Lannate ...	Negative
Barkly E. S. ...	Orthodibron ...	Positive

12.45 Crop: *Cauliflowers*:

Area	Pesticides	Result
Vacoas ...	Diazinon, parathion ...	negative
Clairfonds ...	Aldrin ...	positive
Clairfonds ...	Torbidan ...	negative
Curepipe E.S. ...	Lanante ...	negative

12.46 Crop: *Chillies Chinese Giant*:

Area	Pesticides	Results
Abercrombie Nursery	Morestan ...	Positive
Barkly E. S. ...	Aldrin folimat ...	Degradation product of folimat was detected

12.47 Crop: *Beets*:

Barkly E. S. ...	Lannate ...	Positive
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12.48 Crop: *Carrots*:

Barkly E. S. ...	Prodan, Aldrin M 45 ...	Prodan was detected
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12.49 Crop: *Petsai*:

Area	Pesticides	Result
Curepipe E.S. ...	Lannate	positive
Barkly E.S. ...	Ortnodibron	negative
Curepipe E.S. ...	Lannate	negative

12.50 Crop: *Tomatoes*:

Morcellement St. Andre	Maneb, Zineb perfection	negative
Richelieu E.S. ...	Azodin, M45	negative
Mapou D.C. ...	Lannate M45	negative
Richelieu E.S. ...	Gardona, M45	negative

12.51 *Crop: Chinese Peas:*

<i>Area</i>	<i>Pesticides</i>	<i>Result</i>
Barkly E.S. ...	Lannate	negative

12.52 *Crop: Local Peas:*

Barkly E.S. ...	Lannate	negative
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12.53 *Crop: Cabbages:*

Curepipe E.S. ...	Dimecron	negative
Curepipe E.S. ...	Lannate	negative

12.54 *Crop: Cucumbers:*

Curepipe E.S. ...	Lebaycid	negative
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12.55 *Crop: Aubergines:*

Barkly E.S. ...	Folimat	negative
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12.56 *Crop: Golden Squashes:*

Curepipe E.S. ...	Lannate	negative
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12.57 These results although negative are not conclusive as no sophisticated analytical equipments are available for the detection of a level less than 1 ppm.

12.58 In fact, when such equipments e.g. a G.L.C. and an infra-red spectrophotometer will be made available, research work could be carried out on the pesticides and safety intervals prior to harvest could be determined.

Citrus Greening Disease

12.59 Some 115 samples of citrus species from different localities such as Labourdonnais, Reduit, St. Felix and Barkly were examined. They all showed the presence of the greening symptoms.

Staff Movement 1974

12.60 Mr. Coonjan was appointed Technical Officer in February. Mr. Purmanan was appointed Technical Officer in June. Mr. Belcourt went on overseas leave in July and August. Miss Wan Chat Fwong, Technical Officer, went on overseas leave at the end of August but did not resume her work.

12.61 *No. of samples analysed in the Chemistry Division in 1974:*

1. Livestock Feed Factory			
Materials for the preparation of feeds			673
Prepared feeds			102
2. Livestock Breeding Station			
Various samples			33
Prepared feeds			25
Scum			41
3. Extension Service Division			
Fodder and feeds			15
Soil			72
4. Agricultural Division			
Silica Setaria soil			80
fodder			80
Beetroot soil and basalt dust			5
leaves			25
roots			25
Peas			25
Groundnut soil			20
leaves			20
nuts			20
shells			
Rice soil			20
water			1
Tobacco			65
Acacia			20
Cane tops and leaves			8
Fodder			28
Leguminous Crops			45
Ginger			40
5. Cane fed to cattle at Richelieu			37
6. Fresh Water Prawn Hatchery:			
Water			12
Soil			12
7. Water for other purposes			42
8. Soil for other purposes			27
9. Pesticides:			
No. of pesticides studied			30
Crops analyzed for residues			72
10. Citrus for greening			115

XIII. Dairy Chemistry Division

HEAD OF DIVISION: J. E. PABLOT DIVISIONAL SCIENTIFIC OFFICER (DAIRY)

DAIRY LABORATORY AND PASTEURISATION CENTRE

13.1 The milk survey of the whole island, which started on 29th May, 1973 continued for the year 1974 and is still in progress. Four hundred (400) small cowkeepers are involved. The price paid to them for 1 pint of milk was increased as from July, 1974 from twenty five (25) cents to thirty (30) cents.

13.02 Four thousand one hundred and sixty six (4,166) samples were collected during the year and the following determinations were carried out: Density, Acidity, Fat, Total Solids, Freezing Point, Coliform and Total Bacteria Counts. The yearly average is given under:

Density (Corrected at 20°)	28.7	Protein %	3.27
Acidity	17.2	Freezing Point	0.537°C
Fat %	3.62	Coliforms/ml	9.5×10^2
Total solids%	11.79	Total Bacteria/ml	1.65×10^5
Solids-not fat % (by difference)	8.17		

13.03 At the request of the Veterinary Division, the milk from fifteen (15) Pakistani cows at Animal Home, Port Louis, was collected every morning and evening and sent to Curepipe every morning for pasteurisation. The collection started on 18th June, 1974 and was still on by the end of December, 1974. Representative samples of raw and pasteurised milk were taken daily. One hundred and seventy (170) samples were collected and analysed for the following: Density, Fat, Proteins, Coliform and Total Bacteria Counts. The average results for September, 1974 are as follows:

	<i>Raw and Pasteurised</i>	
Density ...	...	30.2
Fat% ...	...	4.32
Proteins%	...	3.86
	<i>Raw</i>	<i>Pasteurised</i>
Coliforms/ml	10×10^3	NIL
Total Bacteria	12×10^5	39×10^3

Experiments were performed to determine the shelf-life of pasteurised milk kept:

(a) In the refrigerator at 5°C

(b) At room temperature

13.04 The duration of the experiments was such as to cover summer and winter conditions. The experiments started in February, 1974 and lasted up to July, 1974. The acidity of the samples was taken as criteria and when the acidity reached 20°D (Dornic), the sample was then considered unfit for human consumption. The average results of 3 samples for February 1974 were as follows:

SAMPLES KEPT IN THE REFRIGERATOR

<i>Temperature of refrigerator</i>	<i>Time interval</i>	<i>Acidity</i>
5°C	0	16°D
"	3 hours	"
"	6 "	"
"	9 "	"
"	12 "	17°D
"	1 Day	"
"	1.5 Days	"
"	2 "	"
"	2.5 "	17.5°D
"	3 "	"
"	3.5 "	"
"	4 "	18.0°D
"	4.5 "	"
"	5 "	18.5°D
"	5.5 "	19.0°D
"	6.0 "	20.0°D

AT ROOM TEMPERATURE

<i>Temperature</i>	<i>Time Interval</i>	<i>Acidity</i>
25.0°C	0	16.0°D
26.0°C	3 Hours	16.5°D
27.0°C	6 "	17.5°D
27.5°C	9 "	17.5°D
26.3°C	12 "	17.5°D
25.8°C	15 "	18.0°D
25.0°C	18 "	18.0°D
25.0°C	1 Day	18.5°D
26.0°C	1.5 "	19.0°D
27.0°C	2 "	20.0°D

13.50 From the results for July, 1974 (winter conditions), it was found that the milk acidity at the start of the experiment was 14°D i.e. less than that of February and the shelf-life in the refrigerator was eight (8) days. For the pasteurised milk exposed at room temperature (average 18.5°C) 14°D was the acidity at the beginning and the life was found to be 3.5 days.

13.06 It can be concluded from above that for any time of the year, properly pasteurized milk can be kept at least 6 days in the refrigerator and 2 days in the shade at room temperature.

13.07 At the request of the Animal Production Division the survey to check the performances and milk quality of the cows, fed on concentrates, in the field continued up to October, 1974. Two hundred and twenty samples were bought and analysed for fat and proteins.

13.08 The Divisional Scientific Officer (Dairy) and one Technical Officer sat as Chairman and Secretary respectively of the Committee for the establishment of norms for milk and milk products. The Committee was established by the UNDP "Bureau of Standards". The monthly meeting came to an end by June, 1974, when the UNDP expert went away on leave. Norms for two products namely: "Fresh cow milk" and "Pasteurised milk" have been drawn and are ready for the legislation procedure which is to follow.

13.09 Practical courses on quality control of milk were given to the students of the University of Mauritius at different times of the year. Visits to the Dairy Laboratory, Reduit, and the Pasteurisation Centre, Curepipe, were organised. Facilities and advice were granted to interested parties of the private sector who are engaged in the manufacture of dairy products.

13.10 The collection, storage in the cold, pasteurisation and distribution of milk produced at the Livestock Breeding Station, Curepipe for the whole year and from the Animal's Home as from 18th June, 1974, were done by the staff at the Pasteurisation Centre. The monthly collection of milk was as follows:

STATIONS				
<i>Month</i>		<i>L.B.S.</i>	<i>Abercrombie</i>	<i>Total</i>
January	...	8584 L	—	8584 L
Februrry	...	9483 L	—	9483 L
March	...	10493 L	—	10493 L
April ...	...	9426 L	—	9426 L
May ...	...	6655 L	—	6655 L
June ...	...	8143 L	686 L	8829 L
July ...	...	9763 L	1594 L	11357 L
August	...	9592 L	2229 L	11821 L
September	...	10179 L	2340 L	12519 L
October	...	9382 L	1986 L	11368 L
November	...	8549 L	1836 L	10385 L
December	...	7856 L	950 L	8806 L

13.11 Up to June, 1974 the milk was sold to the staff of the Ministry and as from July 1974, the pasteurized milk was collected by the Ministry of Health and used at Victoria and Brown Sequad Hospitals.

13.12 A daily chemical and bacteriological control was maintained on the outgoing pasteurized milk. At the beginning of February 1974, some results of the analysis of the pasteurised milk could not be explained unless the quality of the incoming milk was known. So, as from 18th February samples of the incoming raw milk were taken and analysed: six hundred and twenty-nine (629) were collected and taken to the laboratory. Four thousand three hundred determinations were carried out. The results for 28th (evening) and 29th (morning) June are quoted below:

INCOMING RAW MILK FROM L.B.S.

Coliforms/ml	...	...	4×10^8
Total Bacteria/ml	...	...	15×10^8
Fat %	...	...	3.95
Proteins %	...	...	3.70
Density (Corrected to 20°C)	...	...	29.0
Freezing Point	...	...	0.554°C

OUTGOING PASTEURIZED MILK

Phosphatase Test	...	...	Negative
Coliforms/ml	...	...	NIL
Total Bacteria/ml	...	..	12×10^8
Fat %	...	...	3.90
Proteins	...	...	3.50
Density (Corrected to 20°C)	...	...	29.0
Freezing Point	...	...	0.556°C

13.13 The Dairy Division had two vans engaged on the survey, the transport of milk and the collection of samples.

XIV. Entomology Division

HEAD OF DIVISION: M. J. L. MONTY, DIVISIONAL SCIENTIFIC OFFICER

Staff Movement

14.1 Scientific Officer, Mr. A. Joomye, continued his studies in India for the award of a M.Sc. degree in Entomology.

14.2 Divisional Scientific Officer, Mr. J. Monty, attended a symposium on the use of the sterile insect technique organized by I.A.E.A./F.A.O. in Austria in August 1974.

14.3 Dr. S. E. Kunz, Entomologist appointed by the F.A.O. for stable fly research, terminated his assignment in October.

Activities of the Division

14.4 The work of the Division during the year was a continuation of the activities started in 1973 and consisted mostly of research in stable fly control and of trials in sericulture.

STABLE FLY RESEARCH

Ecology

14.5 The studies on the population dynamics of stable flies started in 1973 were continued. Similar observations were made as in the previous year, concerning the distribution of the two species in the island. *Stomoxys nigra* Macquart was confined to the wetter regions of the island, reaching pest proportions in the summer months. *S. calcitrans* L. was distributed throughout the island, but was never a problem anywhere on the island.

14.6 Following the intensive surveys carried out over the past two years, it was concluded that livestock can be raised in the drier localities of the island without any fear of damage by stable flies. The absence of stable fly problems in the dry regions has been clearly demonstrated at the Riche-lieu Feelot Station, where a herd of cattle has been kept in the open without any annoyance caused by stable flies.

Biological Control of S. calcitrans

14.7 The control of stable flies in the drier zones is believed to be the result of the intensive biological control programmed started by the Ministry of Agriculture in 1966 and which ended in 1972. During these years, thousands of Pteromalid pupal parasites were bred and released. Collections of pupae of *S. calcitrans* in the drier areas have revealed a very high parasitism, accounting for the excellent control of stable flies in coastal districts. The commoner parasites recovered were *Spalangia* spp., *Pachycrepoideus vindemiae* (Rondani) and *Muscidifurax raptor* Giraud and Saunders.

Biological Control of S. nigra

14.8 The natural parasitism in *S. nigra* was consistently low. Exact figures of parasitism could not be determined because of difficulty in collecting the pupae in the sugar-cane fields. The commoner parasite was found to be a Diapriid which occurred throughout the *S. nigra* ecosystem, but at very low densities. The species was not represented in the British Museum and it is being considered to be a new species of the genus *Trichopria*.

14.9 Although this parasitoid is not effecting any natural control of *S. nigra*, temporary control of the fly may be achieved by mass breeding and releasing the parasite. The insect is a larval parasite and techniques for its laboratory rearing are being investigated.

14.10 Materials supplied by the Commonwealth Institute of Biological Control, Uganda, continued to reveal the presence of two Hymenopteran parasites: An Encyrtid, *Tachinaephagus* sp. and a Diapriid *Trichopria* sp. Both parasites have been multiplied in the laboratory and are being released.

Laboratory Studies of S. nigra

14.11 The colony of *S. nigra* was maintained for biology and induced sterilization studies. The larval diet consisted of shredded Elephant grass. Experiments are in progress to increase pupal production by addition of bran to the grass.

14.12 Over the year, 4,416,550 pupae were produced and it is considered that the insect can be mass-reared for an eventual use of the sterile insect technique to eradicate *S. nigra*.

14.13 The study of this techniques forms part of the programme of research on stable flies, but it must be pointed out that the field application of the technique is not at present under consideration.

Chemical Control of Stable Flies

14.14 Trials for the control of stable flies using insecticides were conducted in the field on herd cattle and in large outdoor cages. The field trials were delayed due to very low fly populations resulting from the extremely dry weather conditions which prevailed in October and November 1973.

(a) Field Trials

14.15 Toxaphene, Nankor (ronnel) and Ciodrin (crotoxyphos) were tested in high volume sprayings on three different herds of cattle at a dosage of 0.5 per cent. Ciodrin provided satisfactory control. The difficulty in controlling stable flies in Mauritius with insecticides resides mainly in maintaining the chemical active on the animals for a minimum period of seven days. Stable flies are dangerous to cattle in the rainy season and most insecticides tested during this season lose their effectiveness through weathering off within 48 hours of application.

(b) Cage studies

14.16 Calves stalled in large field cages were used to determine the residual life of some insecticides when applied as a spray. These studies were also conducted to determine whether consistent applications of insecticides in winter and early summer could break the life-cycle of *S. nigra* so as to prevent the fly building up its large summer populations. Of the three insecticides tested (ciodrin, Toxaphene, Nankor) only Ciodrin gave satisfactory control for four days after application. Although the insecticide reduced the fly's populations, the life cycle of the fly was never broken and the population rapidly increased following the discontinuation of the sprays.

Chemical Control of stable flies on milk cattle

14.17 Where cattle is housed individually for milk production, a simple method of control was proved efficient, provided sprays were applied daily during high fly intensities. Ciodrin as a 2 per cent water spray was applied to the legs of a penned animal using a small, inexpensive hand mist sprayer generally used for mosquito control in houses. Excellent kill of stable flies was obtained, as long as the sprays were applied daily.

Sericulture

14.18 The trials at the production of silk cocoons in the different climatic regions of the island continued very satisfactorily. Cocoon production was found to be limited only by the supply of leaves, as the worms thrived in all localities and were not affected by any infectious diseases.

Moriculture

14.19 Observations on the growth of mulberry in the island were continued. Irrigation was found to be necessary for the rapid establishment of plants from cuttings. Generally, a plantation is ready for silk worm rearing six months after planting.

14.20 Pruning should be avoided during the months of April to June in order to obtain a supply of leaves during the winter months. At Redit, an abundant supply of leaves was available in July and August, following pruning carried out in March.

14.21 The average yield of leaves at Redit was found to be 12.225 tons per arpent per year, based on six harvests of leaves from January to December. With this amount of leaves a production of 750 kgs of green cocoons per acre per year can be expected.

14.22 Two new varieties of mulberry were introduced from Vietnam, viz. Ai-Huan and Duy-Viet. They were planted in quarantine prior to establishing them in the field at Redit. Their performance will be tried against the local varieties.

Pests and diseases of the mulberry

14.23 Powdery mildew was a problem only when the leaves are allowed to mature on the plant. The disease does not affect vigorously growing leaves and good crop husbandry should be sufficient to control the disease.

14.24 Sprays of Benomyl (Benlate) at the rate of 250 gms per acre were efficient when chemical control was necessary.

14.25 Mites and leaf-eating weevils are sporadic pests of the mulberry. Dicofol and Phosdrin checked the pests when applied as foliar sprays. There were no toxic effects on the worms when they were fed leaves treated 7 days before.

Egg Production

14.26 The Division continued to produce silkworm eggs from the two pure races Kalimpong A and Nan Nung 6D. Hybrids of the two races were used on the out-stations and the pure races were propagated only at Redit Headquarters. Seed production for 1974 is summarised in Table 1.

TABLE 1

SILKWORM SEED PRODUCTION FOR 1974

<i>Race</i>		<i>No. of Cocoons Selected</i>	<i>No. of Layings Selected</i>
Kalimpong	...	10,475	1,548
Nan Nung	...	10,475	1,978
Hybrids	...	—	4,920

14.27 No contagious diseases were found on the adult moths after egg deposition. The egg sheets were stored in a refrigerator and subjected to acid treatment for hatching as and when required.

Cocoon production

14.28 Production of cocoons was intensified on all the station in order to utilize maximally the mulberry crops available. Results were generally satisfactory. An additional station was opened at Tamarin Falls on a private farm. After an initial training of the owner's personnel, the estate was supplied seeds to produce cocoons. Results are summarized in table 2.

TABLE 2

PRODUCTION OF COCOONS FOR 1974

Locality		No. of Layings	Cocoon Production		Number/kg (calculated)	Wt cocoon per 100 Laying (Kg) (calculated)
			Number	Weight (kg)		
Reduit ...	...	578	220,430	321.490	685.65	55.6
Curepipe	...	57	21,166	32.430	652.67	56.9
Rivière des Anguilles		91	31,078	42.385	733.23	46.6
Plaisance	...	101	36,651	42.471	862.96	42.1
Flacq ...	...	96	35,026	50.082	699.3	52.2
Mapou ...	...	42	13,577	15.582	871.33	37.1
Pamplemousses	...	61	21,018	26.000	808.38	42.6
Barkly ...	...	73	27,751	38.253	725.459	52.4
Tamarin Falls	...	205	79,560	100.005	795.56	48.8
TOTAL	...	1,304	486,257	666.197	729.	51.1

Rhinoceros beetle, Oryctes rhinocerus L.

14.29 The control of the Rhinoceros beetle by the virus *Rhabdionvirus oryctes* continued to be satisfactory. The average number of larvae per manure heap was 3.78 (2.81 for 1973) and the percentage of heaps containing larvae was 14.5 (18.2 for 1973).

14.30 There were sporadic upsurges of the beetles in regions like Palmar where there are few coconut trees and abundant breeding sites for the pest.

Biological Control of the weed Lantana camara

14.31 The following predators of *Lantana camara* were received from the Commonwealth Scientific and Industrial Research Organisation, Brisbane Australia:

Leptobyrsa sp. (Hemiptera Tingidae)

Uroplata girardi Pic (Coleoptera Chrysomelidae)

Octotoma scabripennis Guerin (Coleoptera Hispididae)

Leptobyrsa sp. and *U. girardi* were released in Mauritius, (at Reduit and Plaisance) and *O. scabripennis* in Rodrigues (Plaine Corail)

U. Girardi and *O. scabripennis* have readily established in the release areas.

Miscellaneous observations

14.32 The banana leaf-roller *Erionota thrax* L., first recorded in 1970, was not abundant. The egg parasites (*Ooencyrtus erionotae* and *Agiommatus* sp.) and the larval parasite (*Apanteles erionotae*) were again recovered. The pupae parasite *Scenocharops* sp. was again introduced from Malaysia but has not yet been recovered.

14.33 In an attempt to control the Litchi borer *Cryptophlebia leucotreta* Meyr., the egg parasite *Trichogrammatoidea fulva* was introduced from C.I.B.C. India. 13 consignments were received during the year and the parasites were released in litchi orchards and in regions where the Flamboyant (*Delonix regia*) is abundant, since the borer also lives inside shoots and pods of that tree.

14.34 Twenty adults of the Scoliid wasp *Scolia procer* Ill. were received alive from the Commonwealth Institute of Biological Control Malaysia for the control of the Rhinoceros Beetle. They were released at St. Felix.

Fruit-Flies

14.35 The Natal Fruit-Fly *Pterandus rosa* Karsch heavily infested mangoes. 98 puparia of the fly were collected from the soil in a mango orchard and these 85 flies emerged. It has not yet been possible to obtain natural enemies of this important pest.

14.36 212 puparia of the melon fly *Dacus cucurbitae* Coq. were also collected from the soil in a cucumber field. 184 flies emerged and no parasites were observed. In this case, however, a good chemical control of the pest is generally achieved in the commercial plantations of cucurbitaceas crops.

14.37 Laboratory tests with the insects showed that they were highly susceptible to Gardona (tetrachlorvinphos), an insecticide of low mamalian toxicity currently recommended for the control of fruit flies.

14.38 The Divisional Scientific Officer visited Rodrigues Island in January to make a survey of pests of economic importance. Due to the severe drought prevailing since a long time, there were few crops standing in the field. Maize was found to be heavily damaged by the ear-worm *Heliothis armigera* Hb. Tomatoes were severely affected by the fruit-fly *Pardalaspis cyanescens* Bessi, the first record of this insect for the island. Other fruit flies recorded were: the Mediterranean fruit *Ceratitis capitata* Weidemann, *Dacus cucurbitae* Coq and *D. ciliatus* Loew. The Natal fruit-fly was not collected.

14.39 The following insects were identified by the Commonwealth Institute of Entomology (British Museum):

Diocalandra frumenti F. (Col. Curculionidae) from Coconut Palm
Coptotermes havilandi Holm. (Isoptera, Rhinotermitidae) from *Araucaria* tree.

Trichopria sp. (Hymenoptera, Diapriidae) from *Stomoxys nigra*
Spalangia gemina Boucek and *Pachcrepoideus vindemise* (Rodani) (Hymenoptera, Pteronolidae) from *S. calcitrans*

Apanteles erionatae Wilken. (Hymenoptera Braconidae) from *Erionata thrax*.

Visitors

14.40 The Division received the following visitors from overseas:

Mr. Miller, Agricultural Engineer, USDA, FAO consultant on the *Stomoxys* Research Project.

Prof. T.O. Browing, Head of the Department of Entomology of the University of South Australia.

Dr. F. J. Simmonds, Director of the Commonwealth Institute of Biological Control.

Dr. G. C. La Breque, USDA, FAO Consultant on the *Stomoxys* Research Project.

XV. Crop Experiment Stations

HEAD OF DIVISION: S. Y. E. DOOMUN AGRICULTURAL SUPERINTENDENT

Curepipe Experiment Station

15.1 Officer in Charge—Y. L. Ting Lun, Senior Technical Officer
 (Up to 1.3.1974)

Officer in Charge—R. Gohabar, Senior Technical Officer
 (1.3.1974—15.10.1974)

Officer in Charge—J. C. Appapoulay, Senior Technical Officer
 (16.10.1974—31.10.1974)

Development

15.2 Destoning of fields has continued throughout the year and this has provided great facilities to cultural operations. All stones removed from the fields were used constructing a road in Field I.

Weather Conditions

15.3 The total rainfall for 1974 was 2513.3 mm. March was the wettest month with 369.6 mm while December was the driest with 26.5 mm. The months of September, October, November, December proved to be very dry and all crops planted for seed production during that period suffered badly.

15.4 Below is the rainfall statistics for the year 1974:

<i>Month</i>			<i>Average for 1964-1973 in mms</i>	<i>Rainfall 1974 in mm</i>
January	...	...	465	327.6
February	...	...	443	355.4
March	...	...	388	369.6
April	...	...	290	177.9
May	...	...	214	284.2
June	...	...	198	229.6
July	...	...	241	304.6
August	...	...	228	291.8
September	...	...	123	67.8
October	...	...	133	44.9
November	...	...	132	33.4
December	...	...	275	26.5
TOTAL			3,130	2,513.3

Experiments

15.5 The following experiments were carried out on the Station during the year 1974 by Agronomy Division:

- (1) Experiment on the effectiveness of Calcium Silicate Slag and Basalt dust as soil amendment. This experiment started in 1973 and is still being continued. The crop used is *Setaria*.
- (2) Variety Trial on grass. This experiment is being carried out by the Agricultural Division to compare the suitability of different grasses as a source of fodder.

The varieties planted are :

1. *Pennisetum purpureum*
2. *Cenchrus ciliaris*
3. *Chloris gayana*
4. *Panicum maximum*
5. *Bracharia brizantha*
6. *Bracharia decumbens*
7. *Digitaria decumbens*
8. *Setaria sphacelate*

(3) By the Plant Pathology Division : Different fungicidal treatments against *Asoochyta* of peas.

CROPPING PROGRAMME

Seed Production

15.6 The seed production programme was carried out as planned and after selection the following were sent to Barkly Experiment Station for manipulation and sale to public :

1,800 fruits Cucumber White, 600 fruits Pumpkin, 220 fruits Golden Squash, 423 fruits Bottle, Gourd, 235 fruits Ridge Gourd and 647 gs Soya Bean.

Vegetable and food Crops

15.7 Various Vegetables such as cabbage, cauliflower, leeks, peas, beans, sweet potatoes, colocasia were grown and the produce sold to the public.

Fodder

15.8 In August 1974 La Brasserie Station was taken on charge by Curepipe Experiment Station and since then 13 tons of fodder is being daily cut and sent to Livestock Breeding Station and Veterinary Division, Reduit.

15.9 Of the 250 acres planted with *Setaria* at La Brasserie only 20 acres are in good productive condition, the rest requires replanting.

Sericulture

15.10 The sericulture project at Curepipe Experiment Station started on 15th March, 1973. Silk worms after hatching are brought from Reduit and reared at the station; and the cocoons to Reduit. During 1974, 13 batches were reared on the station.

Livestock

15.11 On 2nd October, 1974 200 Sykes Brown Layers brought from Reduit were being reared on the station. Geese and ducks are kept in association with fresh water fish. At December, 1974, there were on the station:

10 Geese, 76 Ducks, 2 Black Swan and 1 Peahen

Disposal of Produce

15.12 The total revenue collected in 1974 from the sale of various produce amounted to Rs 16,050.15 cs.

15.13 During the year 1974, the following organisations received fruits and vegetables donations.

Christ Church—Mahebourg, Christ Church—Bel Air, C.H.W.A. Quatre Bornes, La Cure—St. Croix, Brown Sequard Hospital—Beau Bassin, St. Paul Factory—Port Louis, Bishops Bazaar, Vacoas.

PLAISANCE EXPERIMENT STATION

Staff

15.14 Senior Technical Officer:

R. Gohabar (February 1974—15.10.74)

R. Purran (Ag. Senior Technical Officer) as from 1.11.1974)

Development

15.15 A mango orchard has been created in fields 9 and 10. The Maison Rouge seedlings, which are being used as stock were planted in situ and grafting was done in August-September. Few plants have died and will be replaced in due course. So far 48 varieties have been successfully grafted with 2 plants of each variety. The following are the varieties which are represented in the orchard: 1. Orphee, 2. Victoria Labourdonnais, 3. Ross, 4. Eugenie, 5. Josée, 6. Aristide, 7. Auguste, 8. Christian, 9. Mulgoa, 10. Raspuri, 11. Sundershaw, 12. Cheribon, 13. Khatta Mitha, 14. Alphonso, 15. Ambin, 16. Madras, 17. Divine, 18. Badami, 19. Alphonso Indian, 20. Chittor Anloot, 21. Roopi, 22. Pion d'Inde, 23. Jamstead, 24. Neelum, 25. Hapus Pasind, 26. Salim, 27. Dodhool, 28. Pairi, 29. Jagatmani, 30. Marmande, 31. Begum Khash of Maldab, 32. Jaune, 33. Baissac, 34. Victoria Boskhy, 35. Genève, 36. Miel, 37. Fusette, 38. Bibi Fazli, 39. Gebert, 40. Goa, 41. Normand, 42. Mohunbag of Maldab, 43. Yone, 44. Society No. 3, 45. Julie, 46. Goa Alphonso, 47. Fermandina, 48. Petit Josée.

Weather Conditions

15.16 During 1974 the rainfall was erratic. Some months received ample rain while it was very scarce in others. There was a short drought from September to end December. As usual the fruit trees suffered most. Again this year the coconut crop was poor owing to scarcity of rain at flowering stage.

15.17 Below is the rainfall statistics:

<i>Month</i>	<i>Average for 1964-1973 in mm</i>	<i>Total Rainfall</i>
January	210	172.9
February	172	172.5
March	212	279.4
April ...	207	31.7
May ...	125	171.4
June ...	109	68.7
July ...	118	99.2
August	74	122.9
September	60	61.1
October	60	61.1
November	86	34.5
December	130	166.1
TOTAL ...	1,563	1,441.5

Experiments

15.18 The following experiments were carried out during the year:

PLANT PATHOLOGY DIVISION

- 1....Fungicide Trial on Ginger
2. Fungicide Trial on Beans
3. Effect of soil disinfectant and pre-planting treatment and foliar fungicide sprays on the incidence of bulb, root and foliar diseases of onion.

AGRICULTURAL DIVISION

1. Spacing and Manurial Trial on Ginger
2. Variety Trial on Peas
3. Fertilizer trial on Garlic

Cropping Programme

A. SEED PRODUCTION

15.19 The seed production programme as detailed below, was carried out as programmed except that planting of groundnut was one month late owing to scarcity of water:

.06 acres Bringelle Rosita, 2 acres Groundnut, .06 acres Chillies Dунputh, .25 acres Bokla and 2 acres Peas Local.

The fruits after selection were sent to Barkly Experiment Station.

Disposal of Produce

15.20 The seeds and fruits sent were:

80,750 Mango variety Maison Rouge, 3,150 Mango variety Baissac, 8,738 Florida Rouge Lemon, 967 Custard apple, 661 Rangpur lime, 338 Chillies Dunputh, 20 Avoca Black Round, 452 kgs Maize seeds (local), 108 kgs Peas local (with thrash), 23 kgs Peas local (seeds), 37 kgs Peas variety greenfeast, 10.5 kgs Peas variety Ajax.

923 Units Malayan Dwarf Red, 1,597 Malayan Dwarf Green, 1,975 Malayan Dwarf Yellow, 1,224 Pemba.

15.21 The sale of produce at the station amounted to Rs 4,015.07 cs for the year.

CENTRAL EXPERIMENT STATION

OFFICER IN CHARGE H. C. GOUGES, SENIOR TECHNICAL OFFICER

Weather Conditions

15.22 The total rainfall recorded during the year amounted to 1,012 mm. as compared to the average normal which is 1,552 mm.

Rainfall, monthly total (mm) and difference from the average normal.

<i>Month</i>	<i>Rainfall</i>	<i>Average Normal</i>	<i>Difference from Normal</i>
January ...	66	243	— 177
February ...	251	268	— 17
March ...	131	297	— 166
April ...	47	153	— 106
May ...	44	87	— 43
June ...	80	77	+ 3
July ...	72	72	—
August ...	11	58	— 47
September ...	77	52	+ 25
October ...	43	41	+ 2
November ...	8	74	— 66
December ...	182	130	+ 52
	1,012	1,552	— 540

15.23 The weather was fairly dry throughout the year except for the month of December, however on the 18th of December alone 95 mm of rain was recorded.

Crops

ORCHARDS

15.24 Five grafts of mandarin variety Ponkan, 6 Frost lemon seedlings and 3 seedlings of "Citron doux de Rodrigues" were planted in the citrus orchard, six avocado grafts, lucuma layer and 2 Pecan nut seedlings were also planted. A small orchard of guava was with a plant of each of the following varieties—Elizabeth, Stane, Large white, Supreme Ruby, Red Supreme Ruby, Acid Speer and Supreme Ruby white. Five grenadine seedlings (red variety) were also planted.

15.25 The citurs crop was sold by tender. An estimate of the yield of the different species was as follows: Oranges—30,000 fruits, Mandarin—20,000 fruits, Grapefruit—7,500 fruits, Tangelo—2,500 fruits and Vangasailles—3,400 fruits.

MANIOC

15.26 The collection of manioc varieties was harvested in July and September. In October a new collection consisting of the following 20 varieties was planted: Butter Stick, Paloma, Ye Yein, Rodney, Bitter, Negrita 15, Australia, Negrita 17, Blachite, Nestor, Manioc Blanc, Singapore, Cassava Berureum, Icery, De Table, De Table St. Martin, Desvaux, Manioc 29, Jaune Rempart, Jan Trianon.

GROUND NUTS

15.27 Plantation was carried out according to programme i.e. 1/10 Arpent each of Florigiant and Beit Dagan and $\frac{1}{2}$ Arpent of 'Cabri' variety for seed production. Crops of the previous year consisting of the same varieties were harvested and sent to Barkly Experiment Station.

VEGETABLE SEED PRODUCTION

15.28 The undermentioned crops were planted for seed production:

Cabbage	... $\frac{1}{4}$ Arpent	... May 1974
Rave blanche	... $\frac{1}{4}$ Arpent	... June
Bean victory	... $\frac{1}{3}$ Arpent	... June
Beetroot	... $\frac{1}{10}$ Arpent	... May-June

FODDER

15.29 Regular maintenance of the grass collection and field was carried out. Fodder was cut and sent to the Veterinary Services and Royal Botanic Gardens to feed stags.

EXPERIMENTS

15.30 The following experiments were carried out by the undermentioned divisions:

A. *Agricultural Division*

- (1) Accacia—Cutting height
- (2) Soya bean—Spacing trial

- (3) Mulberry—Observation and introduction of new varieties for rearing of silkworms
- (4) Observation on and multiplication of newly introduced varieties of Garlic, Peas and Kidney bean.
- (5) Observation on newly introduced varieties of cabbage and beetroot
- (6) Multiplication of Onion variety, White Creole
- (7) Strawberry—variety trial
- (8) *Codariacalyx gyroides*—a legume for observation

B. *Plant Pathology Division*

- (1) Potato—Bacterial Wilt rotation experiment

C. *Entomology Division*

- (1) Assessment of damage of fruit flies on peaches

15.31 To Veterinary Division, Pamplémousses Experiment Station and Palmar respectively: 15.3 tons of mixed fodder. 1.8 tons of mixed fodder. 554 kg of fresh *Accacia* leaves.

To Barkly Experiment Station for seed production:—

Groundnut variety local cabri	...	769.0 kg
Groundnut variety Beit Dagan	...	175.5 kg
Groundnut variety Florigiant		386.5 kg
Accacia seeds variety local	...	110.5 kg
Rangpur lime		6547 units
Cleopatra mandarine		950 units
Rave blanche		517 kg of dry pods
Garlic		19 kg of buld
Onion variety white creole		35 kg uncleaned seeds
Bean variety Victory		15 kg uncleaned seeds
Beetroot local		10.1 kg uncleaned seeds
Cabbage		15.3 kg unclean seeds

15.32 The sales of produce during the year amounted to Rs 2,663.28.

15.33 Vegetables and fruits for the value of Rs 50.10 was given free to some institutions for their fancy fairs.

BARKLY EXPERIMENT STATION

OFFICER IN CHARGE: A. C. CHAN HING CHONG,
SENIOR TECHNICAL OFFICER

Weather Conditions

15.34 The total rainfall for the year amounted to 731.11 mm compared to 972 mm average normal. Table below shows actual monthly rainfall compared to average normal:

<i>Months</i>		<i>Average Normal (mm)</i>	<i>Actual (mm)</i>
January ...	...	159	39.35
February	...	169	215.72
March ...	...	199	113.96
April ...	...	100	40.40
May ...	...	60	12.50
June ...	...	49	65.65
July ...	...	40	29.92
August ...	...	29	70.81
September	...	26	25.15
October ...	...	17	25.06
November	...	38	Nil
December	...	86	128.60

Development

15.35 A concrete floor was made adjoining the manipulation room for drying seeds. Concrete structures for soil blocks have been erected.

Plant propagation

15.36 29,136 plants of various species of fruit trees, 2,899 coconut seedlings and 14,000 various ornamental plants were issued to sale section (mainly) and other stations.

15.37 *Seed production:*

	<i>acres</i>
Bean varieties	5
Bringelle Cipaye Narain ...	.10
Brède de Chine Baton Blanc ...	.5
Brède Kotachee	.75
Brède Martin	.50
Carotte Chantenay	.50
Cotomili	.20
Chillies Cipaye	.20
Chillies Chinese Giant	.09
Cauliflower	.60
Cowpeas Chinese	1.75
Lalo	.22
Lettuce varieties	.08
Peas local	4.0
Peas Chinese	1.0
Patole	.05
Pipengaille	.04
Petsai Distins	.35
Radish	.04
Rave Blanche	.70
Salsifis	.03

Experiments

15.38 The following experiments were performed:

PLANT PATHOLOGY DIVISION

1. A fungicidal trial on bean Long Tom
2. A seed treatment/fungicidal trial against *Ascochyta* on peas
3. A fungicidal trial on bean

AGRICULTURAL DIVISION

1. A variety trial on bean
2. A variety trial on carrot
3. A variety trial on beetroot

In addition to the above:

1. Fortnightly sowings (until March) and transplanting of cauliflower HSI-SHU were made for observation by Horticulturist.
2. Carrot varieties, de la Halle and Algerian Sweet, were planted for observation by Officer in Charge seed production.
3. Lentil, green gram and bengal gram plantations were made for observation by Horticulturist.

Manipulation Section

15.39 After processing, 19,804.271 kgs of seeds (vegetable mainly rice, acacia, maize, etc.) were issued to store while 109,904 units (mango, fruit de cythere etc.) and 4.456 kgs (pawpaw, guava, etc.) of seeds of fruit three were issued to Nursery Section.

*Disposal of Produce*15.40 *Issued Free to Government Institutions*

			Rs
Plants	...	...	3,288.55
Seeds	...	...	10,510.36
TOTAL		...	13,798.91

15.41 *Sold*

			Rs
Plants	...	...	27,317.25
Seeds	...	...	31,917.70
Produce etc.	...	...	4,609.62
TOTAL		...	63,844.57

15.42 *Issued Free to Development Works Corporation and Ministry of Cooperatives*

Seeds worths Rs 6,542.07.

The letchi crop was sold for Rs 7,000.

Remarks

15.43 Following the taking over of seed stores by an Assistant Stores Officer, sale of seeds was interrupted for two months to enable a germination and purity test to be performed on all seeds in store. With the repair of the second mist propagator was not in use since 1971, the production of ornamental plants (cuttings) has increased considerably.

PAMPLEMOUSSES EXPERIMENT STATION

Officer in Charge:

S. P. Vythilingum, Senior Technical Officer (1.1.74—20.4.74)

I. H. Sassa, Senior Technical Officer (w.e.f. 22.4.74)

Cropping Programme

TOBACCO

15.44 3.50 Arpents of NC 95 and S.C. 66 were planted. The incidence of Bacterial wilt was not too severe. 10,976 kgs of green leaves were harvested and 1293.8 kgs of the flue cured tobacco leaves were sent to the Tobacco Board. The leaf quality was good, net returns being Rs 18,428.78 cs.

PEA LOCAL

15.45 1 A was planted. Despite Karathane application the plantation suffered from Mildew. 107 kgs of seeds were obtained.

LETTUCE MIGNONETTE

15.46 About 0.08 A were planted. 800 plants, not good for seed production, were uprooted and sold. 5 kg of seeds were obtained.

BEANS VICTORY AND LONG TOM

15.47 One Acre each variety was planted. Roguing had to be carried out to diminish the incidence of halo blight. Angular leaf spot could be kept under control. The yields were as follows: 300 kg Victory seeds and 205 kg of Long Tom.

15.48 Another plantation of Victory and Long Tom (0.5 Arpent of each) had to be discarded from seed production as it was severely attacked by halo blight, despite roguing, throughout the growth period.

GROUNDNUTS

15.49 Groundnuts planted in October and November 1973 were harvested as follows: Cabri local: 2 Arpents planted on 29th October and 2nd November, 1973 was harvested on 8th March. The yields were 800 kg seeds, Shulamit: 1 Arpent planted on 17th November 1973, was harvested on 17th April, 1974; the yield was 655 kg.

15.50 The plantations were regularly sprayed with Lannate and Benlate +M45 to control leaf tiers and Cercospora leaf spots respectively.

15.51 In October and November 1974, 4 Arpents Cabri, 0.25 A Shulamit and 0.25 A Virginia Bunch were planted. Those plantations had a bad start because (1) of drought (11) our irrigation water was being stolen so that a watchman had to be posted on the canal.

MAIZE LOCAL

15.52 2.5 A were planted in September and December 1973. These were harvested in February and April 1974. 1560 kg of grains were obtained.

WATER MELON

15.53 One Arpent of variety Sugar Baby was planted on 25th September, 1974. The produce harvested in December 1974 was sold.

PERMANENT CROPS

15.54 Like tea, mulberry, asparagus and coconut (pemba) plants were regularly maintained.

Experiments

PEA LOCAL

15.55 A fungicide trial was carried out by Plant Pathology Division.

GINGER

15.56 About 0.25 A was planted for Plant Pathology Division in December.

BEAN

15.57 A fungicide trial was set up for Plant Pathology Division. The plot has not yet been harvested.

15.58 The trial on Bean Victory, Tobacco, Potato, Groundnuts, Ginger and Tomato to assess incidence of Bacterial wilt on these Crops was continued by Plant Pathologist Division on 1 Arpent of land.

SOYA BEAN

15.59 A variety trial was set up in February 1974 by Agricultural Division. Harvest lasted from 28.5 to 8.6. 6 varieties were planted:

Amsoy, Clark, Harasoy, Improved Pelican, Davis and Soya local.

15.60 Two other variety trials were planted by the Agricultural Division in November and December 1974.

Disposal of Produce

TOBACCO

15.61 1293.8 cure leaves sold to Tobacco Board for Rs 18,428.78.

Sent to Barkly Experiment Station (As Seeds)

15.62 234 kg Beans Long Tom, 320 kg Beans Victory, 167 kg Peas local, 655 kg groundnuts shulamit, 1600 kg groundnuts Cabri, 63.6 kg Soya Beans, 5.0 kg lettuce Mignonettes, 9.0 kg Tephrosia seeds.

15.63 *Sent to Abercrombie Nursery*

600 units coconut pemba for propagation.

2316 units coconut pemba unsuitable for seeds.

3959 kg watermelons (sugar baby) unsuitable for seeds.

33 kg bean pulse (affected by Halo Blight).

801 units lettuce mignonette unsuitable for seeds.

1103 units Banana green.

15.64 *Sent to Richelieu Feed Factory*

1560 kg maize local.

15.65 *Sent to Plant Pathology Division*

286 kg Potato Marilyne.

357 kg ginger.

Nursery

15.66 The nursery as in previous years was mainly occupied in the propagation of fruit trees and ornamentals.

The following were supplied to various stations:

- 6775 plants to Barkly Experiment Station.
- 100 plants to Plaisance Experiment Station.
- 7127 plants to Abercrombie Nursery.
- 602 plants to Central Experiment Station.
- 313 plants to Curepipe Experiment Station.
- 4 plants to Tea Experiment Station.
- 113 plants to Royal Botanic Gardens.

ROYAL BOTANIC GARDENS

15.67 *Development*

- (1) A new-wrought iron gate was made to replace the old one at the Small Entrance.
- (2) The silt ponds were enlarged and deepened.
- (3) The fern house was repaired completely.
- (4) The thatched roofs of the 11 kiosks in the garden and of the Model Sugar Factory were replaced.
- (5) The fencing on the boundary was reconditioned and the wall rebuilt.
- (6) The fence around the stag pen was required.

15.68 *Weather Conditions*

Month	Rainfall	
	(in)	(mm)
January ...	6.70	170.20
February ...	6.70	170.20
March ...	5.50	139.70
April ...	2.76	70.10
May ...	2.07	52.58
June ...	3.95	100.33
July ...	3.06	77.72
August ...	3.39	86.11
September ...	1.38	35.01
October ...	0.97	24.64
November ...	1.61	40.89
December ...	3.76	95.50
TOTAL ...	41.85	1,062.98

15.69 *General*

- (1) 163 plants of various species were planted in the gardens.
- (2) The Advisory Committee of the Royal Botanical Gardens met 3 times at Mon Plaisir and once in the Conservator of Forests Office at Curepipe.
- (3) The Araucaria tree near the entrance was felled by the Forestry Service on 30th October following the decision of the Advisory Committee.

Livestock

15.70 There were 14 tortoises: 6 male, 3 female and 5 young ones. By the end of the year there were 17 stags. During the year 3 were born, 2 died from wounds received. One female died in May. 4 hinds and 2 stags were given to the Conservator of Forests for stocking a deer farm.

Visits

15.71 217,320 persons and 16,800 school children visited the gardens. About 20 delegates of UNESCO and officials of the Ministry of Education, Housing and Mr. Michel, Director of Institute visited the gardens on Sunday 14th July, 1974. In August, delegations attending the F.A.O. conference visited the gardens.

15.72 His Excellency the Governor-General and Lord Ogilvy visited the gardens in October.

ABERCROMBIE NURSERY

Development

15.73 A new pond has been constructed.

15.74 *Weather Conditions*

<i>Month</i>	<i>mm</i>
January ...	70.2
February ...	171.1
March ...	158.3
April ...	18.2
May ...	29.8
June ...	96.2
July ...	22.2
August ...	46.6
September ...	19.0
October ...	20.2
November ...	20.9
December ...	198.6

TOTAL ... 871.3

*Crops***CHILLIES CHINESE GIANT**

15.75 About 600 soil blocks were planted. Plants were regularly rogued. 64 fruits were selected and sent to Barkly Experiment Station.

CASSAVA

15.76 About 0.15 A were planted on 1st June, 1974 for propagation. They have been severely affected by drought.

BREDE DE CHINE SALEE

15.77 About 0.07 A were planted for seed. The plantation was rather seriously affected by white rust. 19.7 kg pods were selected.

SWEET POTATOES: VIOLET

15.78 About 0.03 A were planted for propagation.

BITTERGOURD

15.79 Soil blocks were transplanted on 0.08 A of land. Harvest started in November: 875 gm seeds were obtained.

15.80 The permanent crops like grapes, citrus were regularly treated with insecticide. The grapes were pruned. A yield of 12.75 kg were obtained on 3 Citronelle plants in December. The mango orchard suffered badly from drought. There were many fruit drops. Nonetheless a yield of 8,000 fruits was estimated from grafted plants.

*Experiment***PIGEON PEA**

15.81 A variety trial was set up by Agricultural Division on 27th September, 1974.

*Disposal of Produce***15.82 Plants sold to the Public:**

Seedlings of all types of fruit spp & ornamentals ...	11,384	units
Cuttings of all types of fruit spp & ornamentals ...	9,859	units
Layers and grafts ...	999	units
Coconut seedlings ...	2,602	units

Agricultural produce sold:—

Lychees ...	1,800	fruits
Mangoes ...	2,125	fruits
Brinjal ...	202	kg
Water Melon ...	2,000	kg
Sweet Potato ...	175½	kg
Bananas ...	697	units
Cassava ...	830	kg
Lettuce ...	801	units
Brede de Chine ...	146½	kg
Turmeric ...	11	kg
Beans ...	12½	kg

The sales mentioned above brought a revenue of Rs 16,978.60 cs.

RICHELIEU EXPERIMENT STATION

Officer in Charge: Senior Technical Officer—Y. L. Kong Ting Lun

Development

15.83 With the developing cattle industry in the island, the construction of one feedlot for the accommodation of 512 heads of New Zealand Cattle was completed by the end of July. These Animals transferred from Palmar Breeding Station were subjected to a feeding trial using sugarcane as fodder mixed with other ingredients such as fishmeal Urea and molasses. A cane derinding machine was received from UNDP for the purpose of removing the rind from the cane and the comfith then fed to the animals. Later on, a whole cane chipping machine was tried at Richelieu Experiment Station. The machine was found to be much more economical than the derinder. During the course of the year, a total of 2754.360 tons canes received from Tea Development Authority and 508.210 tons harvested on the station were fed to the animals in the feedlot.

15.84 Further one molasses reservoir, one urea reservoir, one water reservoir and a drafting corral in connection with the feedlot were also built.

15.85 More than 20 acres were reclaimed by the end of May, with the object of growing cane for feeding cattle. Heavy implements of the Sugar Planters' Mechanical Pool were used for bulldozing, ripping and ridging the land. By the end of the year 8.75 acres have been put under cane ultivation.

15.86 Other development on the station includes the establishment of mixed orchard.

Weather Conditions

15.87 Except for the month of February which is the wettest month of the year with a rainfall of 177.7 mm, the weather conditions were very dry and very unfavourable for crop production. The total rainfall registered this year amounted to 524.3 mm and is the lowest recorded for the last few decades. The severe drought conditions which were prevailing since July have adversely affected all our crops including sugar-cane, groundnut, manioc and maize and all fruit trees. The situation grew worse at the end of the year when the supply of irrigation water from La Ferme Reservoir was cut off for several months.

15.88 The weather statistics for the year 1974 are as follows:

	<i>Mean Maximum (°F)</i>	<i>Mean Minimum (°F)</i>	<i>Rainfall (mms)</i>
January ..	83.6	76.0	30.7
February ...	84.5	76.3	177.7
March ...	85.1	75.6	60.2
April ...	85.2	73.6	30.1
May ...	83.9	69.7	3.6
June ...	89.7	64.9	73.0
July ...	90.0	65.2	Nil
August ...	85.8	68.0	13.5
September	84.4	67.8	11.5
October ...	86.8	67.1	20
November	87.7	69.2	2
December	91.4	72.4	102

Cropping Programme

15.89 Despite the dry weather the cropping programme has been implemented satisfactorily.

Tobacco

15.90 The summer crop was mainly for seed production. The area planted and the quantity of seeds produced for each variety is given below:

<i>Variety</i>	<i>Type</i>	<i>Area Planted</i>	<i>Seeds Produced</i>
Y. M. ...	Flue cured	1½A	8.20 kgs
NC95 ...	F.C.	¾A	7.00 „
SC66 ...	F.C.	.4A	3.50 „
KE 1 ...	F.C.	.1A	0.15 „
KE 2 ...	F.C.	.1A	0.15 „
Bonanza ...	F.C.	.¼A	1.30 „
Rio Grande	F.C.	1/40A	0.04 „
Burley 11A	F.C.	1/40A	0.15 „
Burley 11B	F.C.	1/40A	0.20 „
Amarello	Air Cured	1A	3.00 „
		3A (approx.)	23.69 kgs

15.91 The second season was planted in September and consisted of 3.25 acres flue-cured variety and .75 acre of air-cured Amarello. The varieties grown are listed below:

<i>Variety</i>	<i>Field No.</i>	<i>Area Planted</i>	
N.C. 95	... B3F7	13230 sq.ft	.35A
SC66	... B3F7	12162 sq.ft	.30A
Bonanza	... B3F7	15300 sq.ft	.35A
Y. M.	... B3F7	34320 sq.ft	.75A
K.E.1	... B3F7	30000 sq.ft	.75A
K.E.2	... B3F7	25238 sq.ft	.60A
Amarello	... B3F7	30000 sq.ft	.75A

(approximately 4 acres) 160250 sq.ft

15.92 The leaf quality was good: the average price per kg cured leaf obtained was Rs 1.037. This figure is high if compared to that of year 1973 which is Rs 5.83. The fuel consumption was high averaging 2.56 kgs of cured leaf per gallon of gas oil plus 0.05 cord of firewood which is equivalent to Rs 1.80 per kg of cured leaf.

15.93 *Seed Production*

	<i>Area planted</i>
1. Tomatoes :	
(a) Marglobe	... 3,000 soil blocks
(b) Moneymaker	... 440 soil blocks
2. Pomme d'amour local	... 0.5 acre
3. Egg Plant	... 850 soil blocks
4. Beans	... 7.5 acres
5. Watermelon	... 0.75 acre
6. Groundnuts	... 5.0 acres

Orchards

15.94 Orchards consists of the following varieties of mangoes and of letchis selected strain No. 8.

LIST OF MANGO PLANTS AT RICHELIEU EXPERIMENT STATION

<i>No.</i>	<i>Varieties</i>	<i>No. of plants</i>
1	Maldes ...	1
2	Goa Alphonso ...	2
3	Monserette white ...	3
4	Victoria ...	3
5	Eugenie ...	31
6	Chittoor ...	1
7	Amirli ...	1
8	Dodholl ...	2
9	Coral ...	4
10	Christian ...	2
11	Gebert ...	2
12	Mulguava ...	1
13	Roppy ...	1
14	Ratragiri Alphonso ...	1
15	Champo ...	1
16	Hafus Pasird ...	4
17	Torse ...	22
18	Maison Rouge ...	139
19	Fernandinan ...	7
20	Josee ...	25
21	Malcorada ...	2
22	Rosat ...	8
23	Orphee ...	7
24	Auguste ...	12
25	Aristide ...	39
26	Baissac ...	20
27	Musarad ...	9
28	Alphonso ...	10
29	Hilario ...	1
30	Stock ...	13
31	Irwin ...	18
32	Indian variety ...	2
33	Eldon ...	2
34	Kert ...	3
35	Hader ...	1
36	Divine ...	1
37	Ambir ...	1
38	Kachamita ...	1
39	Sunder shaw ...	1
40	Yone ...	2

Experiments

The following experiments were carried out by the various divisions.

15.95 Agricultural Division

1. Tobacco ... 2 Variety trials
2. Tobacco ... 2 Fertilizer trials
3. Tobacco ... Breeding for leaf quality
4. Tobacco ... Spacing trial
5. Sugarcane ... Fertilizer trial on yield of stalks and tops
6. Sugarcane ... Cutting intervals
7. Sugarcane ... Planting dates
8. Peas ... Fertilizer trial
9. Cabbage ... Flowering habit of new variety Wakefield

Plant Pathology Division

1. Bean ... Fungicide trial

*Disposal of Produce**15.96 (a) Sold:*

	<i>Rs. cs.</i>
1. Canes for Crop 1974	33,671.17
2. Tobacco—4764.8 kgs fluecured leaf	49,003.94
—548.1 kgs aircured leaf	2,232.95
3. Mangoes—2,545 at 25-30 cts/unit	413.15
4. Stones—368 lorry loads at 1.00/lorry	368.00
Pomme d'amour—local—1,071.0 kgs at 25 cts to 1.20/kg	506.50
Maize Shelling—29,436 kgs shelled at Rs 15/1000 kgs	441.54
Groundnut—15 kgs at 50 cts/kg	7.50
Asparagus—12.5 kgs at 2.00/kg	25.00
Manioc—1813 kgs at 25 cts/kg	453.25
Coconut—229 units at 25-40 cts/unit	74.80
Sweet potatoes—94 kgs at 25 cts/kg	23.50
Milk—1211.1 litres at 60 cts/litre	726.36
Watermelon—2,640.5 kgs at 40 cts/kg	1,055.26
Melon—13 units at 50 cts/unit	6.50
Citrus—20 units at 40 cts/unit	8.00
Guava—2kgs at 50 cts/kg	1.00
Bringelle Farcie—121 kgs at 50 cts/kg	60.50
Grapes—14.5 kgs at 6.00/kg	87.00

TOTAL REVENUE FOR YEAR 1974 ... 89,165.92

15.97 (b) *Sent to Barkly Experiment Station for processing propagation and sale to the public*

2,882 kgs of groundnut local cabri, 70 kgs of groundnut Florigiant, 2,188 mango seeds variety Maison Rouge, 3,219 mango seedling variety Maison Rouge, 472 mango seedling variety, Baissac, 547 fruits watermelon sugar baby, 395 kgs Bean Long Tom, 257.9 kgs pomme d'amour local, 502 units Bringelle Farcie.

15.98 (c) *Sent to Abercrombie Nursery for sale to public*

569 mango seedlings variety Maison Rouge

15.99 (d) *Given free of charge to Tobacco Board*

8.5 kgs Tobacco seeds variety Y.M., 4.5 kgs Tobacco seeds variety NC 95, 1.0 kgs tobacco seeds variety SC 66, .75 kgs tobacco seeds variety Bonanza, 3.0 kgs tobacco seeds variety Amarello.

15.100 (e) *Given free of charge to Fancy Fair*

46 kgs pomme d'amour local, 10 coconuts.

Visits on Stations

15.101 The Feedlot has attracted a fair number of visitors to the Station. On the 10th of May, Dr. Preston, the F.A.O. Animal Production Consultant, gave a press Conference on the working of the feedlot and invited the members of the press to visit the station. On 21st June, a group of tobacco planters from Reunion Island visited the tobacco plantations. The station had the pleasure of receiving the visit of distinguished sugar technologists from different parts of the world on the 3rd July, the visit of some delegates of the Eighth FAO Regional Conference for Africa on 9th August; the visit of a Chinese Delegation on 17th September; the visit of another Chinese Agricultural Team on the 9th October and finally the visit of Members of the Comité de Collaboration Agricole de l'Île Maurice, Le Réunion et de Madagascar on the 22nd of November.

NOUVELLE DECOUVERTE RICE PROJECT

Development

15.102 About 200 ft. of terrace was built with stones.

Weather Conditions

15.103 Rainfall, monthly total (mm), average normal and difference from normal:

<i>Month</i>	<i>Rainfall</i>	<i>Average Normal</i>	<i>Difference from Normal</i>
January ...	262	335	— 73
February ...	381	387	— 6
March ...	337	484	— 147
April ...	572	269	+ 303
May ...	900	243	+ 657
June ...	106	170	— 64
July ...	169	177	— 8
August ...	225	136	+ 89
September ...	87	148	— 61
October ...	65	53	+ 12
November ...	69	81	— 12
December ...	243	225	+ 18
	3,416	2,708	+ 708

The total rainfall for the year was quite above the normal but it was unevenly distributed.

Crops

MAIZE

15.104 Nine acres was put under maize in January and February. The crop was intended mainly for the manufacture of feed by the Richelieu Livestock Feed Factory.

MANIOC

15.105 The 4 varieties of manioc St. Martin, Jaune Trianon, Manioc 29 and Desvaux planted in June 1973 were harvested and the same four varieties were replanted in 1 arpent of land in another field.

SWEET POTATOES

15.106 A collection of varieties consisting of the following: Joes, Mirbelle, Violet, Bourbon, Red, Pelican processor, Gandia, Raisin and SM 4 was planted on about $\frac{3}{4}$ arpent of land during the month of March. After harvest a new plantation of the same varieties was set up in another field.

FODDER

15.107 In addition to the existing *Setaria* plantation, 3 arpent has been planted with Elephant grass at the request of the Divisional Scientific Officer (Entomology).

15.108 *Disposal of Produce*

<i>Crop</i>		<i>Quantity</i>	<i>Disposed to</i>
1. (a) Fodder setaria	...	27,300 kgs	...
			Artificial Insemination centre, Division of Veterinary Services
(b) Fodder (elephant grass)		2,960 kgs	...
			Entomology Division
2. Maize cobs	...	622 units	..
			Barkly Experiment Station for seed purposes
Maize seeds	...	1,376 kgs	...
			Livestock Feed Factory
3. Sweet potatoes	...	4,963 kgs	...
			Sold to employees of the station & Central Experiment Station
4. Manioc	...	1,861 kg	...
			
5. Pois sabre	...	9 kg seeds	Barkly Experiment Station

The sale of produce during the year amounted to Rs 623.05.

TEA EXPERIMENT STATION

15.109 SENIOR TECHNICAL OFFICER: C. GOUGES (up to 27.7.1974)

Ag. SENIOR TECHNICAL OFFICER: L. LI TING WAI (w.e.f. 29.7.1974)

Weather Conditions

15.110 It was relatively dry during the whole year, particularly from April to November and the total annual rainfall was below normal by 55.25". The driest months were September, October and November with rainfall less than three inches (3") for each month.

15.111 Throughout the year, the average monthly maximum temperature was below normal except for the month of October and December. On the other hand, the average monthly minimum temperature was above normal except for May and November.

TABLE I

MONTHLY RAINFALL (mm) AND THE AVERAGE NORMAL (1931-1960)

<i>Month</i>	<i>Rainfall</i>		<i>Average Normal</i>	
	<i>(in)</i>	<i>(mm)</i>	<i>(in)</i>	<i>(mm)</i>
January	14.10	358.1	21.20	538.5
February	13.41	340.6	18.20	462.3
March	12.40	315.0	21.20	538.5
April	6.22	158.0	18.12	460.2
May	9.05	229.9	12.52	318.0
June	8.04	204.2	10.88	276.3
July	9.23	234.4	12.40	315.0
August	12.95	328.9	11.24	285.5
September	2.85	72.4	7.48	190.0
October	2.31	58.7	5.68	144.3
November	2.09	53.1	7.68	193.1
December	10.72	272.3	12.04	305.8
	103.37	2625.6	158.64	4027.5

TABLE II

MAXIMUM AND MINIMUM TEMPERATURES (°F)

<i>Month</i>	<i>Average Maximum</i>	<i>Average Minimum</i>
January	77.2	66.0
February	76.9	66.9
March	77.4	66.0
April	74.9	64.5
May	71.9	60.1
June	68.0	57.9
July	67.5	56.7
August	68.5	57.7
September	68.2	56.3
October	74.3	59.4
November	74.2	57.2
December	79.0	65.9

TABLE III
MONTHLY YIELDS AND PERCENTAGES FOR 1971 TO 1974

Cropping Programme

FIELD

15.114 The total weight of green tea leaves harvested during the year amounted to 461,389 half kgs as compared to 440,778 half kgs for the previous year:

Month	1971		1972		1973		1974	
	Yield	% Total	Yield	% Total	Yield	% Total	Yield	% Total
January ...	72,722	16.0	61,578	14.91	73,056	16.58	80,743	17.50
February ...	51,916	11.43	30,872	12.32	54,520	12.37	52,502	11.59
March ...	84,890	18.68	53,342	12.92	71,808	16.29	72,146	15.64
April ...	41,384	9.10	47,286	11.45	57,802	13.11	53,764	11.65
May ...	26,268	5.78	37,490	9.08	27,988	6.34	31,930	6.92
June ...	12,058	2.65	15,576	3.77	11,766	2.66	11,684	2.53
July ...	5,090	1.12	9,894	2.40	3,758	0.85	4,658	1.01
August ...	6,086	1.33	7,696	1.86	4,924	1.09	2,330	0.50
September ...	11,066	2.42	16,526	4.00	9,390	2.17	10,082	2.19
October ...	29,322	6.45	24,720	5.98	41,782	9.47	34,066	7.38
November ...	43,892	9.66	40,720	9.86	36,226	8.22	39,534	8.57
December ...	69,666	15.33	47,274	11.45	42,866	10.85	67,950	14.52
TOTAL ...	454,300		412,990		440,788		46,389	

TABLE IV

AVERAGE YIELD IN HALF KGS/ARPENT

<i>Year</i>		<i>Half Kgs/Arpent</i>
1970	...	6,486
1971	...	6,514
1972	...	5,922
1973	...	6,309
1974	...	6,591

A 3 year pruning cycle has been adopted since 1972, i.e. pruned, unpruned and deepskiffed.

15.112 Split applications of fertilizer in the ratio of 25:5:5 were applied in October 1974 and January 1975. Fertilizer was applied at the rate of 1 kg N. for every 50 kgs of green tea leaves or 1kg N. for every 10 kgs of manufactured tea.

15.113 *Seed Gardens.* 59,176 half kgs of tea seeds were collected in the various seed gardens during the year as compared to 37,454 half kgs, obtained from the previous year. From the amount obtained in 1974, 46,508 half kgs of 'sinkers' were obtained.

TABLE V

MONTHLY YIELD (HALF KGS) FOR ALL SEED GARDENS AND
PERCENTAGE OF TOTAL

<i>Month</i>		<i>Yield ($\frac{1}{2}$ kgs)</i>	<i>% Total</i>
January	...	360	0.61
February	...	7,434	12.57
March	...	11,308	19.11
April	...	17,139	28.97
May	...	22,935	38.74
June	...	—	—
July	...	—	—
August	...	—	—
September	...	—	—
October	..	—	—
November	...	—	—
December	...	—	—

Fertilizer mixture (3:1:1) at the rate of $1\frac{1}{2}$ kgs per plant was applied in the following seed gardens: De Rauville, Midlands, Curepipe Experiment Station and Central Experiment Station.

Nursery

15.115 Pruning and fertilization in the nucleus clone 1H have been carried out. Leaf cuttings were taken in January, February and December and 47,328 cuttings were potted.

			<i>Cuttings</i>
January ...	...	...	23,500
February ...	...	...	7,454
December ...	..	...	16,374
			47,328

15.116 *Disposal of Produce*

<i>Produce</i>	<i>Sold to</i>	<i>Quantity</i>	<i>Rate</i> <i>Rs cs</i>	<i>Amount</i> <i>Rs cs</i>
Green Tea	Corson Tea Factory	7,485 H. kg	0.28	2,095.80
Leaves	Dubreuil Factory	197,906 kg	0.28	55,413.68
	Dubreuil Factory	255,998 kg	0.30	76,799.40
		461,389		134,308.88
Tea Seeds	Tea Development Authority	5,000 H. kg	1.00	5,000.00
	Mon Desert Alma	1,000 „	4.50	4,500.00
	La Coutanciere Ltd.	50 „	4.50	225.00
			TOTAL	9,725.00
Clonal	Corson Tea Estate	2,000 plants	0.20	400.00
Plants	F.U.E.L.	1,000 „	0.20	200.00
	Tea Development Authority	47,939 „		Account Pending

XVI. Livestock Breeding Stations

HEAD OF DIVISION: Y. AUMJAUD, SUPERNUMERARY AGRICULTURAL SUPERINTENDENT

16.01 The Livestock Breeding Stations include stations at Curepipe, Palmar, Richelieu and the Poultry Breeding Centre at Reduit.

Milch Breed

16.02 At the end of the year thee two livestock breeding stations at Curepipe and Palmar carried a total of 387 heads of milch cattle of all ages. Of these, there were 291 females and 96 males. There were 79 calvings during the year—42 females and 37 males. The average weight of heifer calves was 24.0 kg and that for bull calves was 29.8 kg. The average weaning was 78.8 kg at 90 days.

16.03 At Curepipe L.B.S., over lactation period of 305 days, first calvers yielded 5.3 kgs of milk per head per day, the best performer yielded 7.1 kg with a peak of 10.8 kg. Over 305 days, second calvers yielded 5.9 kg of milk per head per diem, the best performer yielded 7.5 kg with a peak of 11.8 kg. Over 305 days, third calvers yielded 6.8 kg of milk per head per diem, the best performer yielded 9.9 kg with a peak of 15.2 kg. Over 305 days, cows with than three calvings gave 5.5 kg of milk per head per diem.

16.04 During the year nine cows and two bulls were sold for slaughter. Within the Rural Development Programme, 2 cows were made available to the Ministry of Economic Planning and Development for distribution to cowkeepers.

New Zealand cattle

16.05 The main event of the year 1974 on the station had been the introduction of cattle of mixed breed imported from New Zealand on 30th March. The 1350 heads received, consisted of 346 males and 1004 females; they were all kept at Palmar until the first week of May 1974 when 512 heads—352 females and 160 males were transferred to Richelieu Feed Lot. During the year 12 births and 10 deaths were reported and 2 animals were sold for slaughter on humane grounds.

Herd Cattle

16.06 There were at Palmar L.B.S. at the end of the year 121 heads of Ongole, 98 heads of Boran and 118 heads of Zebu crosses. Some of the animals were artificially inseminated with imported Charolais semen and at the end of the year 1974, 10 births were recorded. There were 47 calvings out of which 16 were from Ongole, 4 from Boran, 17 from Zebu crosses and 10 from Charolais crosses. The average weight at birth and weaning for the different breeds were as follows:

<i>Breed</i>	<i>Av. Birth-weight (kg)</i>		<i>Av. weaning wt. (kgs)</i>
	<i>Males</i>	<i>Females</i>	<i>Males and Females</i>
Ongole	26.0	24.0	113 at 6 months
Boran ...	25.0	25.0	115 at 8 months
Zebu ...	27.5	30.0	119 at 6 months
Charolais ...	23.8	31.5	104.6 at 6 months

During the year 13 head of herd cattle were sold and 5 Boran bulls were transferred to Rodrigues.

Goat

16.07 At the end of the year there were 136 goats of the Anglo-Nubian breed—39 males and 97 females. 100 kids—48 males and 52 females—were born with an average birth weight of 3.2 kg and a weaning weight of 19.5 kg. An average of 1.81 kiddings per doe was recorded.

16.08 At the end of the year there were 79 heads of the Jumna Pari breed—20 males and 59 females. 44 kids—16 males and 28 females were born. The average birth weight was 3.5 kg and the weaning weight 18.5 kg. The average kidding per doe was 1.6.

16.09 53 weaners of the Anglo-Nubian breed and 10 weaners of the Jumna Pari were made available to farmers. 3 Anglo-Nubians, 8 Jumna Pari and the only British Alpine goat were disposed of for slaughter. One anglo-nubian male was transferred to the SILWF as a first prize award in a competition. Only 2 female Rodrigues goats are left. During the year a new goat shed of 15 pens was built.

Sheep

16.10 At the end of the year there were 15 heads of Polled Dorest sheep and 38 heads of Corriedale sheep of all ages. The number of births registered were 2 from the Polled Dorset breed and 10 from the Corriedale breed.

16.11 Two sheep were issued to the Ministry of Health and two sheep were transferred to the Division of Veterinary Services. One sheep was sold for slaughter.

Pigs

16.12 During the year the second pig unit at Palmar LBS was completed. At the end of the year the total number of pigs at the two Livestock Breeding stations was 207. 825 piglets were farrowed with an average of 9.8 piglets per litter. The average birth weight of the piglets was 1.02 kg and the average weight at weaning was 8 kg.

16.13 A total of 467 piglets and old breeders were sold to the Ministry of Co-operatives and C.D. for distribution to members of co-operative societies throughout the island.

Rabbits

16.14 At the end of the year the Curepipe and Palmar livestock breeding stations carried a total of 210 rabbits. During the year 428 rabbitlings were born; 201 weaners were sold to breeders, 5 were issued to the Animal Health Laboratory and one to the Mapou Demonstration Centre.

16.15 The Poultry Breeding Centre maintained parent stock of Sykes Brown and Sykes Tinted from F & G Sykes for the production of layers. In addition the Centre maintained Ross Broiler parent stock for the production of broiler chicks.

16.16 During the year the Poultry Breeding Centre hatched 121,653 chicks. 39,205 day-old pullets, 11,901 months-old pullets and 53 point of lay pullets for the production of eggs were sold to poultry keepers.

16.17 To help the production of poultry meat, 14,240 day-old broilers and 52,383 day-old and month-old male chicks from laying stock were sold respectively. 3,425,785 kgs of dressed chickens and culls, 811,600 kgs live cull were sold for table. The Centre also provided 57 chickens to the Animal Health Laboratory for the testing of vaccine, 200 points of lay pullets to Curepipe Experimental Station, 120 month-old pullets to the Extension Services and 400 month-old pullets to the Ministry of Co-operatives and Co-operative development.

Hybrid Sykes Brown

16.18 A total of 62,675 hybrid Sykes Brown chicks were produced, of which 22,732 day-old pullets, 6,268 month-old pullets, 30,673 day-old cockerels and 348 month-old cockerels were sold for eggs and poultry meat production respectively.

Hybrid Sykes Tinted

16.19 A total of 43,239 hybrid Sykes Tinted chicks were produced of which 16,473 day-old pullets, 5,633 month-old pullets, 21,347 cockerels and 15 month-old cockerels were sold.

Broiler Chicks

16.20 A total of 15,739 broiler chicks were produced, of which 14,240 were supplied to small poultry keepers.

Egg Production

16.21 During the year 299,108 eggs were produced at the Poultry Breeding Centre. The monthly production of the various breeds maintained during the year was as per *Annexure A*.

16.22 Out of the 299,108 eggs produced, 2,373 eggs carried forward from the year 1973, 45,245 were sold for table, 169,821 eggs were incubated for the supply of chicks to the public; 3,526 eggs were issued to the Animal Health Laboratory for vaccine production, 2,760 eggs to the Artificial Insemination Laboratory and 73,245 eggs to the Brown Sequad Hospital, Ministry of Health, also for table. The stock in hand at 31 December, 1974 was 2,194 eggs.

Reproductive Performance

16.23 During the year under review 121,653 chicks were hatched. The average fertility and hatchability were 88.8 per cent and 73.1 per cent respectively of all eggs set.

16.24 The monthly reproductive performance of all breeds were as per *annexure B*.

16.24 The monthly reproductive performance of all parent stock breeding was as per *annexure C*.

Import of Stock

16.26 To meet the demand of layers the following were imported from the United Kingdom:

(i) Sykes Brown Parent Stock	... 1,240
(ii) Sykes Tinted Parent Stock	... 512

16.27 For the production of broiler chicks, 306 day-old Ross parent stock pullets and 48 day-old cockerels were imported.

Animal Health (Mortality)

The Poultry Breeding Centre carried an average of 12,215 birds of all ages on a monthly basis. The mortality in adult stock during the year was 5.8 per cent and in the group 0—12 weeks, the mortality was 7.1 per cent.

Annexure A

RECORD OF MONTHLY EGG PRODUCTION FOR THE YEAR 1974

<i>Month</i>		<i>P. S. Sy. Brown</i>	<i>P. S. Sy. Tinted</i>	<i>P. S. Ross Broiler</i>	<i>Hybrid</i>	<i>P. S. Ranger</i>	<i>Total</i>
January	...	6,814	4,795	693	2,224		14,526
February	...	8,819	7,161	3	2,596	—	18,579
March	...	13,777	7,604	—	2,435	—	23,816
April	...	12,940	6,297	—	2,189	—	21,426
May	...	15,628	6,394	—	2,343	—	24,365
June	...	15,182	6,452	175	2,438	—	24,147
July	...	16,345	6,825	1,918	2,490	—	27,678
August	...	16,960	7,132	5,257	2,565	—	31,914
September	...	16,068	7,093	5,208	2,235	—	30,604
October	...	16,390	7,029	4,983	2,406	—	30,808
November	...	14,149	5,808	4,662	2,489	—	27,108
December	...	12,463	5,137	4,138	1,927	472	24,137
TOTAL	...	165,535	77,627	27,037	28,437	472	299,108

Annexure B

MONTHLY REPRODUCTIVE PERFORMANCE FOR THE YEAR 1974

<i>Month</i>		<i>No. of egg set</i>	<i>No of fertile</i>	<i>No of chick hatched</i>	<i>% Fertility</i>	<i>% hatched of Fertile</i>	<i>% hatched of all eggs set</i>
January	...	690	498	136	72.1	27.3	19.7
February	...	9,296	7,709	6,188	82.9	80.2	66.5
March	...	17,391	14,674	11,564	84.4	78.8	66.5
April	...	22,012	19,281	15,204	87.5	78.8	69.0
May	...	18,219	16,539	13,520	90.7	81.7	74.2
June	...	13,475	12,221	9,868	90.6	80.7	73.2
July	...	15,681	14,329	12,801	91.3	89.3	81.6
August	...	15,828	14,639	12,876	92.4	87.9	81.3
September	...	16,854	15,460	13,250	91.7	85.7	78.5
October	...	21,407	19,037	16,177	88.9	84.9	75.5
November	...	14,456	12,454	9,444	86.1	75.8	65.3
December	...	3,549	921	625	95.6	67.8	64.9
TOTAL	...	169,821	147,762	121,653	88.8	89.1	73.1

Note : % for December has been calculated on 963 eggs as the difference has been set in December 74 and chicks came out in January 1975.

Annexure C

Monthly Performance of all Parent Stock Breedwise in 1974

Month	Sykes Brown					Sykes Tinted					Ross Broiler				
	Number of eggs set	Number fertile	Number of Chicks hatched	% fertility	% hatched of Fertile	Number of eggs set	Number fertile	Number of Chicks hatched	% fertility	% hatched of Fertile	Number of eggs set	Number fertile	Number of Chicks hatched	% fertility	% hatched of Fertile
January	...	5276	4359	82.6	78.6	3952	3290	2717	83.2	82.5	690	498	136	72.1	27.3
February	...	10947	9183	83.9	78.3	6444	5491	4367	85.2	79.5	68	60	42	88.2	70.0
March	...	14719	12850	87.3	77.3	7293	6431	5264	88.1	81.8	—	—	—	—	—
April	...	12946	11751	90.7	80.0	5273	4788	4111	90.8	85.8	—	—	—	—	—
May	...	8083	7326	90.6	78.2	5392	4895	4137	90.4	84.8	—	—	—	—	—
June	...	8121	7452	91.7	90.4	7008	6364	5661	90.8	88.9	552	513	402	92.9	78.3
July	...	6096	5566	91.3	89.9	5794	5351	4652	92.3	86.9	3938	3722	3218	94.5	86.4
August	...	6400	5792	90.5	85.2	6081	5489	4671	90.2	85.1	4373	4179	3644	95.6	87.2
September	...	8979	7899	87.9	84.7	7147	6118	5131	85.6	83.8	5281	5020	4349	95.0	86.6
October	...	6200	5244	84.5	68.5	4072	3279	2528	80.5	77.1	4184	3931	3323	93.9	84.5
November	...	—	—	—	—	—	—	—	—	—	963	921	625	95.6	67.8
December	...	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL	...	87767	77422	88.2	80.9	58476	51496	43239	88.6	83.9	20049	18844	15739	93.9	83.5

XVII. Extension Services

HEAD OF DIVISION: L. R. BRUNET, DIVISIONAL SCIENTIFIC OFFICER
FIELD VISIT

Contract with Farmers

17.01 With the improvement of the staff situation, the Division increased its individual contacts with crop farmers and livestock breeders almost twofold. Over 26,500 visits were paid to crop plantations and about 4,100 visits to livestock breeders. During these visits information and advice on various aspects of crop cultivation and animal husbandry were tendered to farmers.

17.02 Greater attention was given to the more important crops viz: sugarcane, potato, maize, groundnut, onion, rice, tomato, tea as well as the classes of livestock like poultry, rabbit, cattle and goat. Emphasis dwelt on priority management practices eg. rational fertilization, recruiting, weed control, crooping cycle, harvesting and maturity for sugarcane, spacing, pests and diseases control for groundnut; fertilization; pests and diseases control for potato; pruning and fertilization for tea; pests and diseases control for tomato; varieties, pests and diseases control and fertilization for onion; spacing, fertilization and adoption of hybrids for maize; housing for rabbits, housing and breeding in the case of cows and goats.

17.03 With regard to livestock breeders, the field officers were engaged mainly in giving advice on animal nutrition, housing and breeding. Specific visits were paid to goat breeders who have applied for improved stock; they were generally informed of the buck service on Demonstration Centres and also of the breeders in their neighbourhood who have obtained improved bucks.

Group Meetings

17.04 Talks and discussion sessions with groups of professional planters and livestock breeders continued as in previous years. Altogether 133 group meetings related to crop production were held and attended by over 3,200 planters; similarly 20 such meetings were held on livestock management and were attended by over 600 breeders.

17.05 About half of the group meetings on crop production were dedicated to sugarcane cultivation. At the beginning of the year 10 talks were delivered on potato growing and other four on onion cultivation to members of Cooperatives Societies during meetings organized by the Ministry of Cooperatives. Other crops dealt with were groundnut, maize, rice, tea, tomato. The meetings with livestock breeders dwelt mainly on cow management, rabbit, poultry and goat rearing.

Conducted Tours

17.06 Taking planters to sites of agricultural interest was part of the the group work. Five tours were conducted in 1974 during which about 100 planters visited the Cane Nursery at Pointe aux Sables, demonstration plots and plantations on agricultural Stations.

Use of Mass Media

17.07 The Division programmed and presented a series of 7 talks on the Television in both Creole and Bhojpuri, on crops and livestock production. A special Television talk on food production was given in the context of the World Health Day Campaign.

Field Demonstration

17.08 A large number of fertilizer demonstrations were conducted in fields of farmers on major crops according to the Fertilizer Demonstration Project viz: 39 on sugarcane, 8 on potato, 4 on groundnut, 1 on ginger, 4 on onion, and 3 on maize. Moreover 23 demonstrations were performed on the chemical control of pests and diseases and 5 on weed control in sugarcane fields.

Publications

17.09 Through the monthly publication of the Farming News the farming community was kept informed regularly of latest research findings and recommendations. Each issue, printed in 1,700 copies, was distributed widely to farmers.

17.10 Two issues of AYC Bulletin were made during the year—each turned out in 450 copies, in the interest of the Agricultural Youth Movement.

17.11 Over 3,000 advisory leaflets on sugarcane, maize, groundnut, rice, onion, garlic, potato, coconut, fruit trees, poultry were printed and distributed as and when required.

17.12 About 700 handouts in support of lectures given during the Agricultural Training were printed and distributed to participants.

17.13 Moreover booklets on pest control, disease control, rabbit raising and "Guide de Culture Potagere" were issued to the farming public on demand.

Permanent District Demonstration Centres

17.14 The four Permanent District Demonstration Centres continued to function as regional headquarters for agricultural extension activities.

17.15 Sugarcane varieties M438/59 and M124/59 were grown at each centre for demonstration purposes and incidentally provided some planting materials for interested planters.

17.16 Demonstrations were laid on several crops viz. sweet potato, groundnut, asparagus, cow pea, water melon, maize (hybrids), tomato, beans, etc. Onion, ginger and potato were also grown in comparative demonstration. Other crops were grown in their appropriate seasons to demonstrate good management practices.

17.17 A unit of several classes of livestock comprising rabbit, goat, poultry and cattle were maintained at all centres. Silk worm rearing from mulberry plantations on the centres also continued.

17.18 The centres provided sources of planting materials to planters. Requests for cuttings of new cane varieties, suckers of pine apple and banana, sweet potato vines, manioc sticks, vegetable seeds, fruit plants were all created for.

17.19 A few crosses of Jumna Pari and Anglo-Nubian goat breeds were produced on these centres and were sold to-breeders for improvement of their stock. Moreover, breeders brought their does to these stations for buck services; over 100 such services were made during the year. 73 tons of livestock feed were sold from the centres.

17.20 As in the past the Agricultural Training Course for members of youth organisations were held simultaneously on 3 Demonstration Centres, besides the headquarters, Reduit.

17.21 The four centres and seven other Extension offices were kept open on 3 afternoons per week to receive visit and entertain request for advice from farmers.

Demonstration Centre, Mapou

17.22 About 1,400 kgs of foodstuffs and 1,550 eggs were produced. 24 "gaulettes" of sugarcane planting materials, 510 kgs of seeds, over 15 tons of livestock feeds, 3 goats and 8 rabbits were sold on the station to farmers. Total sales amounted to Rs 22,518.

Demonstration Centre, Rivière des Anguilles

17.23 About 2,300 kgs of foodstuffs, 1,018 litres of milk and 1,754 eggs were produced. 52 fruit plants, 171 kgs of seed, over 15 tons of livestock feeds, 3 goats and 8 rabbits were sold on the station to farmers. Total sales amounted to Rs 22,518.

Demonstration Centre, Central Flacq

17.24 About 4,100 kgs of foodstuffs were produced and 660 kgs of seeds, 117 fruit plants, 34 goats and some 38 tons of animal feeds were sold to farmers. Total sales amounted to Rs 37,193.

Demonstration Centre, Plaisance

17.25 About 2,700 kgs of foodstuffs, 1,900 eggs, 2,200 litres of milk were produced. 64 fruit plants, 225 kgs of seeds, 6 rabbits and 13 tons of livestock feeds were sold to farmers. Total sales amounted to Rs 19,324.

Propagation and Distribution of Sugarcane Varieties

17.26 The ban on the plantation of the cane variety M377/56 was removed in 1974. Planters were accordingly informed through the mass media, group meetings and individual field visits. Possible sources of planting materials of this variety were surveyed on a regional basis and communicated to interested planters.

17.27 The four Demonstration Centres carried the two latest varieties i.e. M 438/59 and M 124/59 in demonstration plots. Planters continued to be referred to the Pointe aux Sables Cane Nursery for provision of healthy planting material. In some special cases arrangements for transport of cuttings were made by the officers to help planters. However, it appears that planters are growing more reluctant to have recourse to that source because of the problem of distance.

Assistance to Farmers

17.28 54 soil samples were taken from sugarcane fields to be replanted, analysed and fertilizer recommendations were made accordingly for the benefit of planters.

17.29 Incidental to a survey on fertility of sugarcane plantations, 194 small planters benefited from leaf analysis and fertilizer advice subsequently.

17.30 About 100 breeders called at the Demonstration Centres to avail of buck services and 73 goats of improved breeds were sold. The thrasher was lent to rice planters on request.

Foodcrops

17.31 Foodcrops production in sugarcane interlines continued to rise particularly with the extension of maize in ratoons. The total effective acreage under foodcrops was estimated at 9,688 out of which 1,667 arpents of pure stand equivalent were intercultivated in sugarcane lands.

17.32 The main crops in sugarcane interlines were the following with their respective gross acreages:

Potato	...	...	2,112 arpents
Groundnut	...	...	559 arpents
Maize	...	...	387 arpents
Beans	...	...	197 arpents
Tomato	...	...	119 arpents

17.33 Creepers and peas also occupied substantial acreages of sugarcane interlines. Potato was grown over 1,277 arpents of pure stand equivalent comprising of 974 arpents in sugarcane interlines. The total production was estimated at 9,254 metric tons and the average yield per arpent was 7.2 metric tons.

17.34 The acreage under groundnut was 887 arpents of pure stand equivalent, out of which 242 arpents were cropped in sugarcane interlines. The total production was estimated at 1,545 metric tons and the average yield per arpent was 1,742 kgs.

17.35 With the price support offered to producers, the total acreages under maize rose to 1,615 arpents of pure stand equivalent out of which 189 arpents were grown in cane interlines.

PESTS AND DISEASES

Sugarcane

17.36 No outbreak of gumming disease has been observed; its spread appears to have been kept under control by cultivation of resistant varieties. However, pink and spotted borers occurred to some extent on certain cane varieties mainly in the uplands.

Potato

17.37 Some germination failure as in 1973, attributed to a seed borne fungal disease, was observed in certain plantations. Losses to Bacterial Wilt were as usual. As most planters presently resort to routine preventive sprays against Blight, that disease has been controlled rather well.

17.38 Cutworms and tuber moths occurred sporadically and often eluded control.

Groundnut

17.39 Leaf spot diseases and leaf tier insects persisted as the main problems; nevertheless planters are becoming more conscious of the the need to resort to plant protection measures.

Onion and Garlics

17.40 Blight and Purple Blotch diseases occurred to a moderate extent while Pink Root Rot inflicted serious damage in onion growing areas; no practical means of control is presently available against Pink Root.

Tomato

17.41 Regular spraying has become a routine protection measure against Blight. Fruit flies and borers remain the major insect pests, which however are kept in check by the application of insecticides, a measure adopted by all planters.

Maize

17.42 Rust and cob borers were observed particularly on hybride maize.

Pine apple

17.43 The mealy bug continues to be a major pest in pine apple plantations; a necrosis, the cause of which is obscure, was observed on fruits in certain plantations.

17.44 The Natal Fruit Fly poses the biggest problem on fruit trees. A slight recrudescence of Rhinoceros Beetle was reported in some areas, which however is an aspect which is characteristic of biological control.

Work with Youth

17.45 The number of Agricultural Youth Clubs rose to 100 by the end of the year—90 in Mauritius and 10 in Rodrigues. There were altogether 7 girls' clubs and 5 other mixed clubs.

17.46 The regional AYC Federation continued to serve the 42 clubs in the districts of Grand Port, Savanne and Flacq.

17.47 The main activities, as in the previous year, comprised of the formation of new clubs, training of club leaders, imparting agricultural education, holding of agricultural competitions supplemented by other activities like Essay Competition.

17.48 The officers of the Division held about 370 meetings in the clubs; moreover, 22 tours were organised taking club members to various places of agricultural interest.

17.49 A Rabbit Competition and a Kitchen Garden Competition were held grouping the participation of 42 and 55 clubs respectively. The competitions were followed by a prize giving day and tour of some of the best clubs of the South.

17.50 Two leadership training courses were programmed for club members, each of two days duration. The first took place in Mauritius with a participation of 42 members, the second one was held in Rodrigues with 49 participants.

17.51 225 AYC members participated in a display programme held on the occasion of the Independence Day Celebration.

17.52 As in the past, an agricultural training course of 2½ months duration was conducted on Saturday mornings at 4 centres. 50 participants sponsored by various youth organisations attended the course.

Miscellaneous Activities

17.53 The Agronomist and the Animal Husbandry Officer participated as lecturers in a seminar held by the National Federation of Young Farmers. 12 other lectures were given by Dr. N. Bakkar, FAO Expert, and the Agronomist in the context of the training programme held for Village Development Officers of the Economic Planning Unit.

17.54 Later, the Village Development Officers organised 8 meetings during which Extension Officers discussed the need for kitchen gardening and raising of small classes of livestock with villagers; Extension Officers subsequently helped in the setting up of model kitchen gardens in a number of villages.

17.55 The Extension Service contributed in other aspects of the Rural Development Programme. Cropping plans were prepared for newly terraced areas and the villages covered by the project were provided with advisory as well as other services relevant to agricultural development.

17.56 The Division also helped the Mauritius College of the Air in its agricultural initiation programme aimed at secondary schools.

17.57 The Division collaborated with the Ministry of Health in the World Health Day Campaign. One television talk was delivered and an exhibition on home food production was held simultaneously in 4 regions of the island for one week.

17.58 Upon request a number of visits were paid to schools and poor institutions by the officers. Advice was given accordingly as well as assistance in the way of seeds, fertilisers, pesticides, and fruit plants.

Liaison with Agricultural Research Organisations

17.59 Throughout the the year close contact was maintained with research institutions/divisions. The following talks were attended by the officers of the Division:

<i>Date</i>	<i>Subject</i>
21st May ...	"Revue des travaux du MSIRI en 1973 (Champs)"
28th May ...	"Revue des travaux de la Division de Technologie Sucrière en 1973"
23rd July ...	"Nouveau Regard sur la fertilisation de la canne"
20th August ...	"L'emploi du Benlate dans le traitement des boutures de canne a sucre et semences des pomme de terre"
24th September ...	"La production et la culture du maïs hybride"
13th October ...	"Performance des nouveaux herbicides"
19th November ...	"Nature of damage caused by the spotted borer of sugarcane"
17th December ...	"Variétés de canne a sucre pour la grande culture"

17.60 Five demonstrations on mechanical loading and planting were attended by the Extension Officers.

17.61 At the end of the year a seminar grouping Extension and Research specialists of the Ministry was held. The following topics were reviewed:

- (i) Control of Fruit Flies
- (ii) Selection of vegetable varieties
- (iii) Onion, Garlic and Ginger
- (iv) Leguminous Crops
- (v) Control of Diseases.
- (vi) Control of *Heliothis* spp.

Surveys

17.62 Routine surveys conducted by the Division comprised the following:

- (i) Weekly recording of market prices for vegetables
- (ii) Assessment of food production
- (iii) Survey of area under potato and onion and their production for Agricultural Marketing Board
- (iv) Assessment of herbicide damage on foodcrops
- (v) Investigations of fodder problems

17.63 With the help of Test Chemists posted in the Division during the intercrop season a fertility survey of sugarcane fields belonging to small scale planters was carried out using the foliar diagnosis technique. After analysis at the MSIRI, the results were interpreted and fertiliser advice tendered to the planters surveyed. A preliminary interpretation of the results indicated a satisfactory status of phosphate in such lands; however, potash appeared substantially deficient.

17.64 On the premise that long calving intervals is affecting milk performance adversely, a survey was started so as to determine the causes of low conception rate within the cow population. A list of cows inseminated from October 1973 to January 1974 was drawn up from which a nucleus of cowkeepers in various localities were set up. These cowkeepers are being followed closely in that investigation into the field and other causes of the low conception rate.

Staff

17.65 The staff of the Division was further strengthened during the year. One Agricultural Superintendent was appointed in connection with livestock extension. Seven additional Technical Officers joined the Division—one was attached to the Information and Audio Visual Unit, the rest was deployed in the field, four for crop extension and the other 2 for livestock extension.

17.66 Dr. N. Bakkar, FAO Livestock Expert, left at the termination his contract.

Foodcrops

17.67 The following tables were prepared from the data collected by the Extension Service:—

Year	AREA HARVESTED (ARPENTS)														Total	
	Maize	Muntio	Aronilles	Sweet Potatoes	Groundnuts	Irish Potatoes	Beans & Peas	Pine Apples	Brinjal	Tomatoes	Ginger	Creechers	Mixed Vegetables	Bananas		Rice
1973	...	505	56	33	1,090	1,409	421	132	166	1,194	159	947	1,118	1,064	474	8,858
1974	...	1,615	40	14	887	1,277	510	217	148	1,259	221	667	1,451	906	404	9,688
ESTIMATED ACREAGE YIELD (KGS/ ARPENT)																
1973	...	875	7,732	5,424	1,820*	7,146	996	5,098	6,096	4,002	7,302	7,246	6,081	9,600	1,863	—
1974	...	1,043	6,775	5,928	1,742*	7,247	1,490	4,866	6,399	5,333	8,090	6,766	6,179	9,632	1,653	—
ESTIMATED TOTAL COMMERCIAL PRODUCTION (METRIC TONS)																
1973	...	442	433	530	179	1,984	10,069	440	673	1,012	4,778	1,161	6,862	10,214	883	46,459
1974	...	1,684	271	354	83	1,545	9,254	760	1,056	947	6,715	1,788	4,513	8,727	668	47,331

*Green Weight.

The acreages shown above were effective acreages harvested and include the aggregate acreages of different crops grown on the same land in one year, as well as foodcrops interplanted with sugar-cane.

XVIII. Division of Veterinary Services

HEAD OF DIVISION: M. F. MOSAHEB, PRINCIPAL VETERINARY OFFICER

Artificial Insemination and Veterinary Aid Services

18.01 The activities of the Division of Veterinary Services comprise of performing Artificial Insemination, providing veterinary aids to cowkeepers, looking after the health of livestock at all Government stations, carrying out tuberculin tests on herd cattle at Government stations and sugar estates, quarantining both large and small animals, preparation of poultry vaccines and carrying out post mortem examinations and diagnostic works at the Animal Health Laboratory, issuing import permits and enforcing the Animal Disease Ordinance.

18.02 The total number of Artificial Insemination performed during the year amounts to 9,934, out of which 678 have been done on Sundays and Public Holidays.

18.03 Both Friesian and Creole semen from bulls at Artificial Insemination Centre were used. Charolais frozen semen was used on Ongole cows at Palmar Livestock Breeding Station. The average conception rate with both Creole and Friesian semen from the Artificial Centre was 52.4 per cent.

Animal Health

18.04 Apart from an outbreak of infectious Kerato conjunctivitis which was seen in one herd in the south of the island, no new animal diseases were recorded among the large animals. However, among the imported animals, Brucellosis was diagnosed in the Lohi sheep and Beetal goats imported from Pakistan and Enzootic Pneumonia was diagnosed in the Jumna Pari goats from India. All the sheep and goats from India and Pakistan were humanely put to sleep and their carcasses incinerated.

18.05 Tuberculin tests were out carried on sugar estates herds and a total of 1,524 animals were tested out of which 21 reacted to the test, giving a percentage of 1.4 per cent. These animals were usually disposed of through slaughter.

18.06 The field officers of the Division attended to the following cases:

Mineral deficiencies	...	...	955
Affection of the udder	...	...	588
Difficult calvings	...	...	696
Digestive disorders	...	...	1,108

Animal Health Laboratory

18.07 During the year a total of 3,803 specimens was subjected at the laboratory. These specimens were subjected to pathological, bacteriological, parasitological and haematological examinations.

18.08 The included live animals, animal carcasses, blood, milk, water, faecal samples and skin scrapings and were submitted by Government Centres, private owners and Police authorities. Of the above, 1,400 specimens were brought by the members of the public, 1,015 by Government centres and 22 by Police authorities.

18.09 In addition, 366 specimens, including raw hide articles, stuffed animals, animal skins were submitted to the laboratory where they were sterilized prior to release.

Vaccine Production

18.10 No vaccine was imported from Madagascar and the following represent the number of doses of each of the vaccine produced at the Animal Health Laboratory and sold during the year 1974:

<i>Type</i>	<i>Unit (doses)</i>
Newcastle Disease Vaccine (live) ...	218,922
Fowl Pox vaccine ...	215,185

Animal Quarantine Service

18.11 To ensure against the introduction of infectious/contagious diseases into Mauritius the provisions of the Animal Diseases Ordinance were rigidly applied to all imports of livestock and livestock products. The quarantine kennels, the catteries both at Reduit and the Mauritius Society for the Prevention of Cruelty to Animals, Rose Hill, and the Poultry Quarantine Unit at Reduit, and the Animal Quarantine Station at Roche Bois (near Port Louis) were maintained. Part of the Animal's Home at Port Louis was used as quarantine to house 20 Sahiwal heifers in calves, 4 bulls, 13 Lohi sheep and 10 beetal goats imported as gift from the Government of Pakistan.

18.12 To ensure against the introduction of any diseases through the importation of live goats from Madagascar, the slaughter of these goats was restricted to the slaughter house at Roche-Bois which is under the control of a fully qualified veterinary surgeon. Likewise, cattle from Madagascar were Slaughtered at Slaughter House of Roche Bois, Rose Hill and Curepipe.

LIVESTOCK AND LIVESTOCK PRODUCTS

A. Livestock

18.13 Under the provision of the Animal Disease Ordinance, 41 ships and 58 aircraft carrying livestock were cleared by the staff of the Veterinary Services and all livestock whether for slaughter or breeding purposes was subjected to quarantine at the Quarantine Stations. During the year the following stock was received at the quarantine stations:

<i>Country of Origin</i>	<i>Bullocks</i>	<i>Sheep</i>	<i>Goats</i>
Madagascar ...	3,135	—	1,056
Rodrigues ...	662	180	4,194
Australia ...	—	1,386	153
New Zealand ...	1,352	—	—
South Africa ...	8	—	—
Pakistan ...	24	13	10
India ...	—	—	96

18.14 In addition 378 cage birds from different countries were held in quarantine prior to release to importers. At Reduit and M.S.P.C.A., Rose Hill, 19 dogs and 5 cats imported from various countries were held in quarantine for a period of six months from the date of arrival. Further, 7,114 day-old chicks from the United Kingdom, 14,156 from Canada, 1,215 from Holland, 7,880 from Western Germany, 250 day-old turkeys and 235 ducklings from the United Kingdom and 54 pigs from South Africa and three from St. Brandon were also imported.

B. *Livestock Products*

18.15 During the year 1,607 imports permits and 468 landing permits were issued. All frozen meat landed was subject to veterinary inspection prior to release for sale. The following table summarizes the import of livestock products including frozen meats, offals, by-products of abattoirs and prepared livestock feed:

<i>Livestock product</i>	<i>Quantity (lbs)</i>
Frozen beef & beef products	2,503,111
Frozen mutton & offals & preparations ...	2,287,659
Frozen goat meat and offals ...	211,772
Frozen pork and pork products ...	174,753
Frozen poultry ...	338,742
Frozen turkeys & ducks ...	42,745
Livestock feed (poultry, pig, dog, rabbit, horse and pheasant and duck) ...	32,553,920
Fish meal for livestock feed ...	400,040

Slaughter Data

18.16 During the year 1,826 calves, 52 cows (slaughtered on humane ground) and 2,094 bulls of the milch breed were slaughtered, producing 849,772 lbs of beef. In addition, 546 herd cattle and 530 bullocks imported from Rodrigues were slaughtered yielding 256,834 lbs of beef 2,772 bullocks imported from Madagascar were slaughtered and produced 880,032 lbs of beef.

18.17 Likewise, 32,664 lbs of mutton and 189,484 lbs of goat meat was produced in Mauritius and another 58,616 lbs from 1,636 imported goats and sheep giving a total of 280,764 lbs. 1,549,740 lbs pork was produced in the country, including pigs imported from Rodrigues. In these figures, offals and preparation are not included.

18.18 The slaughter house returns revealed the following average weight of imported and local cattle slaughtered during the year:

Local herd cattle ...	251 lbs
Local milch cow ...	267 lbs
Local bulls of milch breed ...	223 lbs
Calves of local milch breed ...	201 lbs
Rodrigues cattle ...	226 lbs
Madagascar cattle ...	317 lbs

18.19 During the same period 476 permits were issued for the slaughter of males of the milch breed for wedding and religious ceremonies. During the year 2 butchers were licensed to sell beef in meat shops licensed by the Ministry of Health.

Slaughter House Control

18.20 52 animals of the milch breed were allowed slaughter on humane ground.

18.21 During the year 13 cases of illegal slaughter (including 5 goats, 1 heifer, 3 cows and 3 bulls of the milch breed and 1 stag) were examined and certificates issued to the Police Department.

18.22 Likewise, 18 cases of alleged cruelty to animals and 3 accident cases were examined and certificates issued to the Police Force.

18.23 From the Meat Inspection returns, 6 total and 177 partial seizures on account of bovine tuberculosis were reported among the Madagascar bullocks slaughtered at Roche Bois, Rose Hill and Curepipe Slaughter houses, giving 6.6 per cent of T.B. cases among a total of 2,772 head slaughtered during the year.

18.24 In respect of the local stock of Zebu and milch animals, 8 seizures on account of bovine tuberculosis were reported, giving .2 per cent of T.B. cases among the total of 4,118 heads slaughtered during the year. In addition there was 1 partial seizure in respect of Rodrigues cattle on account of bovine tuberculosis in giving a percentage of 0.2 among a total of 530 heads slaughtered.

Advisory Services

18.25 Officers continued to visit large and small livestock breeders for on-the-spot advice and lectures delivered to Young Farmers.

Staff

18.26 The Principal Veterinary Officer, Dr. M. F. Mosaheb, accompanied by the Veterinary Adviser, went on mission to South Africa, Madagascar, Tanzania and Swaziland in June and to Somalia in November for on the spot study of disease picture of these countries for eventual importation of live animals for slaughter.

18.27 Veterinary Officer, Dr. Heetun, went to Madagascar in July, September and again in October to supervise the vaccination, marking, tagging, weighing and loading of bullocks and goats imported by the Ministry of Commerce and Industry.

18.28 Dr. D. Sibarite and Messrs. C. V. Li Iwok Cheong, D. Boodhun, A. Issany, H. C. Ah Lan, A. Matabadul, C. Fatty, B. Putty, and I. Dossa joined the division as Technical Officers.

18.29 *Revenue*

	<i>Rs</i>
Veterinary fees	24,975.45
Sale of vaccine	25,940.32
Quarantine fees	26,755.44
Adv. a/c: Dogs	5,362.62
Sale of Milk	594.12
Import permits fees	1,664.
Miscellaneous	3,215.54
Lease of cows	1,890.15
Sale of drugs	9,563.76

XIX. Projects Implementation Division

HEAD OF DIVISION: T. M. NARAIN, DIVISIONAL SCIENTIFIC OFFICER

19.01 In pursuance of its policy to implement agricultural development Programme as indicated in the 4-year plan, activities were continued at:

- (1) The Northern Plain Irrigation Pilot Project
- (2) The Northern Plain Irrigation Project (Immediate Works Programme)
- (3) The Small Wells Scheme

NORTHERN PLAIN IRRIGATION PILOT PROJECT

19.02 31 bursts of aluminium pipes occurred during irrigation operations. As a result 12 portable aluminium pipes have been permanently damaged. Some 19 pipes have been repaired at Richelieu Workshop.

19.03 The 8 inch feeder pipeline from St. André borehole No. 1 had cracked at one spot and was repaired.

19.04 Repair work to roads were carried out. The pumps for Borehole No. 1 was removed for servicing and when reinstalled it was lowered 10 feet deeper. After that the water yield was higher.

19.05 More than half of the water at this borehole was used for domestic supply and the surplus was pumped into the reservoir for irrigation.

19.06 It was observed that water droplets from the Target Master did not damage the foliage of foodcrops grown within the Pilot Project. Consequently, the medium and small sprinklers were used on a few occasions, in combination with the Target Master whenever there was a demand for planting tobacco or tomato crops and when the 2 Target Masters could not be taken back to irrigate these crops on its usual round of 18 to 25 days.

19.07 A second borrehole yielding $1\frac{1}{2}$ cusec of water was identified and fitted with a submersible pump some 3,000 feet from borehole No. 1. Both boreholes were linked to the same feeder line. Thereupon control of water from Rouge Terre borehole was giving back to the Central Water Authority.

19.08 The additional water made it possible to irrigate the Pilot Project on a 10 to 12 day cycle.

19.09 The Northern Plain Irrigation Pilot Project Water User's Co-operative Society, registered on 24th April 1973, assumed responsibility to irrigate planters' lands as from the 5th October 1973. It employed 1 tractor driver, 1 pump operator and 3 irrigueurs. This Society received a subsidy of Rs 30,0000 i.e. Rs 150/Arp. to meet irrigation costs. Planters of the Project contributed a token fee of Rs 50/Arp. This was subject to revision after a year of trial.

19.10 In all 12A75 of virgin canes were planted and consisted of the following sugar cane varieties:

<i>Variety</i>	<i>Area (Arpent)</i>
M 377/56	9A75
M 13/56	3A

19.11 The table below shows the extent of diversified cropping carried out during the year. It is assumed that $\frac{1}{3}$ of the area where inter cropping is practised equals to the area in pure stand:

<i>Crop</i>	<i>Pure Stand (Arpent)</i>	<i>Interrow cropping (Arpent)</i>	<i>$\frac{1}{3}$ of inter- cropped Area (Arpent)</i>	<i>Total Full Crop (Arpent)</i>
Tobacco	5	—	—	5
Tomato	45	19.75	6.6	51.6
Beans	1	—	—	1
Bittergourd	1	—	—	1
Maize	—	10	3.3	3.3
Groundnuts	1	—	—	1
Cucumber	0.50	—	—	0.50
TOTAL	53.50	29.75	9.9	63.40

19.12 Mr. Gilbert Chaillet left in May 1974 to take up the job of Agronomist at Rose Belle S.E. Mr. Len Palmer, Agronomist from Huntings Technical Services left on completion of his tour in September 1974.

19.13 The highest rainfall occurred in January, February and March and the months of October, November and December were registered as the driest. The total precipitation for the year has been 996mm or 39.8 inches. In all sixteen irrigation cycles were carried out. Irrigation was stopped in July in order to allow canes to mature. After harvest, irrigation resumed in September. The average yield of sugar cane within the Pilot was 39.1 tons per Arpent as compared to 21 tons/Arpent outside the project thus giving a yield increase of about 18 Tons/arpent.

19.14 It was reported that the Target Masters sprinkled water on a diameter less than 350 ft. As a result the target masters were fitted with new nozzles and a slight gain of 15 ft. was recorded.

19.15 Experiment with a Nelson gun sprinkler was carried out. It was found that the diameter covered was better than the Target Masters. However, it left spots receiving less than $\frac{1}{2}$ " of water and the setting had to be for a longer period because its capacity was 650 g p.m. compared to 900 g p.m. for the Target Master.

19.16 The following personalities visited the Pilot Project during 1974:

The Governor-General, Sir Abdool Rahman Osman, G.C.M.G.

Mrs. Judith Hart, Minister for Overseas Development from U.K.

Hon. Angus Ogilvy

Technicians of the People's Republic of China

The Youth Delegates from Commonwealth Countries

NORTHERN PLAIN IRRIGATION PROJECT—IMMEDIATE WORKS PROGRAMME (STAGE 1)

19.17 Following the approval of the Hunting Technical Report by the Government of Mauritius an agreement was signed in January 1974 between Sir Mac Donald & Partners and the Government of Mauritius for undertaking the design work listed under the Immediate Work Programme.

19.18 In accordance with the Agreement, Sir Mac Donald & Partners were to prepare the designs and contract document for the following works:

- (1) Reducing the losses occurring in La Nicolière Feeder Canal.
- (2) Reconstruction of all structures at present causing blockage on the feeder canal.
- (3) Improvement of existing weirs on the feeder canal at Bois Clair and St. Julien in order to separate the canal flow from that of the river.
- (4) Construction of new diversion and measuring weirs on the Rivière Chevette and Rivière Vacoas.
- (5) Completion of the distribution system for the existing 28 inch diameter pipeline, taking into account the future extension of the pipeline to an intake at La Nicolière reservoir.

—19.19 To that effect Dr. M. C. Edwards, Senior Design Engineer and Mr. C. N. Holland, Design Engineer came to Mauritius in February 1974.

19.20 The works under Immediate Works Programme were divided into six contract documents namely NP1 to NP6.

The nature of these contract documents are as follows:

NP1 La Nicolière Feeder Canal: Melrose—Pont Bon Dieu

NP2 Diversion Structures

NP3 Remodelling of Canal Structures

NP4 La Nicolière Feeder Canal: La Pipe to Melrose

NP5 La Nicolière Reservoir (Mercier Offtake)

NP6 Reticulation System within the project area.

SMALL SCALE IRRIGATION PROJECT

19.21 With a view to increase agricultural production, the supply of irrigation water to the farming community continued to be a priority. Apart from the 2 main irrigation projects viz. Northern Plain Irrigation Project and Western Costal Region Irrigation Project research for underground water for irrigation purpose was continued in the following region:

- (1) South East Coast in the region of Trois Boutiques.
- (2) West Coast in the region of Albion, Petite Rivière and St. Martin.
- (3) Northern Plaines outside the ambit of the Northern Plaines Irrigation Project.

19.22 During 1974, 42 boreholes were drilled of which 29 were successful for economic exploitation. The table belows shows the drillings carried out:

<i>Regions</i>	<i>Boreholes</i>		
	<i>Successful</i>	<i>Unsuccessful</i>	<i>Total</i>
Pointe aux Caves	1	—	1
Richelieu	2	1	3
Pointe aux Piments	1	—	1
Bras d'Eau	2	1	3
Petite Rivière	1	—	1
Rivière du Rempart	12	—	12
Petit Verger	1	2	3
Albion	1	—	1
Roche Bois	—	1	1
Pointe aux Sables	1	4	5
Poste de Flacq	6	2	8
Canot	1	2	3
TOTAL	29	13	42

19.23 During the year the prices of materials and irrigation equipment increased considerably and the Committee set up to execute the Small Scale Irrigation Project reviewed the viability of this project in the light of current prices. The capital cost for a unit of 15 arpent was now estimated at 46,000 rupees (based on 1973 prices). As regards benefits derived from irrigated land the Committee found that the additional returns per arpent were not adequate and the scheme was thus considered to be financially nonviable. At the end of 1974, however, the project was reconsidered with improvement of the sugar prices the scheme became financially viable. Accordingly the boreholes dug at l'Esperance Trebuchet were recommended to the farmers for exploitation.

XX. Land Use Division

OFFICER IN CHARGE: C. S. AMIDE, AGRICULTURAL SUPERINTENDENT

20.1 Our Ministry was responsible in the Rural Development Programme of the Ministry of Economic Planning and Development for providing technical assistance to the Development Works Corporation in the execution of the following two projects:

- (a) Terracing of identified mountain slopes, their subsequent parcelling out to eventual lessees and advice on their management.
- (b) The exact locations of areas for (a) and (b) were to be identified with the Cooperation of the Ministry of Economic Planning and Development.

20.2 The Rural Development Committee was set up under the chairmanship of the Chief Agricultural Officer to meet once monthly for helping the Rural Development Unit in the above projects and following the progress of work. Members included officers of the Ministry as well as of the Ministry of Economic Planning. There were 8 meetings of committee held during the year, and World Bank officials had 3 meetings with the Ministry to review the progress of the agricultural projects of the Rural Development Programme.

20.3 Agricultural Superintendent Mr. C. S. Amide was appointed coordinator between this Ministry and the Ministry of Economic Planning and Development. He was the contact point at the Ministry for the specialised officers of this Ministry and of the Ministry of Economic Planning and Development for all matters relating to the projects concerned.

Bench Terracing

20.4 The object of the project was that the scarcity of good arable land in Mauritius led to cultivation on very steep slopes of mountains resulting in severe erosion, which therefore had to be minimized. About 1,000 acres were considered as requiring protection by bench terracing. 500 acres were to be terraced in the year 1974 and another 500 in the subsequent year.

20.5 The laying out and surveying of the terraces would be carried out by officers of this Ministry. Stone wall would be constructed by hand to form a series of steps with level soil between. The Development Works Corporation was the executive agency for building the walls, levelling the earth and construct access tracks. After terracing, cropping programmes would be worked out for the most profitable subsequent use of the terraces.

20.6 The Agricultural Engineer, Mr. Satar, was assigned the responsibility of:

- (a) identifying the areas to be terraced from the Project Map of the World Bank.
- (b) Designing soil conservation measures required.
- (c) Advising on their execution to be undertaken by the Development Works Corporation.

20.7 Several visits to various sites were made in the company of officers of the Rural Development Unit and the Ministry of Housing and Lands to identify suitable areas. They were situated at Case Noyal, Salazie, Vallée des Prêtres, Crève Coeur, Les Mariannes, Pointe aux Feuilles, 4 Soeurs, Petit Sable and Grand Sable. They formed a total of approximately 300 acres.

20.8 The Agricultural Engineer worked out a design of the retaining wall and the procedure to be carried out for the construction of bench terraces. The design, referred as Drawing No. B1, was submitted to and approved by the World Bank.

20.9 Subsequently the Arlidge Land Utilisation Map of Mauritius, published in the course of the year, was to replace the Project Map of the World Bank, as it was found to be a more accurate instrument for demarcating the areas to be terraced.

20.10 La Ferme area was the first site where bench-terracing started under the Rural Development Programme. It was, in fact, first undertaken in 1973, under the sole supervision of the Development Works Corporation. Some 2.5 acres were completed before this Ministry took over the technical guidance in May, 1974. By August, 0.25 acre of land was terraced and the work of bench terracing was subsequently stopped because of the dry climate and the rocky nature of the soil. Furthermore, the land was found, according to Arlidge Map, to be more suitable to forestry, fodder and wildlife.

20.11 Salazie was the second site which the Ministry of Economic Planning and Development obtained in July from the Ministry of Cooperative for bench-terracing. Some 25 acres of land were identified of which the Development Works Corporation had completed 4 acres by the end of the year.

20.12 Cropping programmes for the cultivation of the terraces at both La Ferme and Salazie were prepared by the Agronomist of the Extension Service and submitted to the Rural Development Unit for execution.

20.13 Mr. D. Bavard, Soil Conservation Expert recruited under French Technical Assistance, was posted to this Ministry since April to assist the Agricultural Engineer, Mr. Satar in the bench-terracing project.

20.14 Mr. N. N. Walsh, Agriculturist of the World Bank, visited the sites in July at the invitation of the Rural Development Unit, and advised the Ministry and the Development Works Corporation staff on the techniques of laying out and constructing a bench terracing system. He submitted a report to the Rural Development Unit on the project.

20.15 Messrs. Satar and Amid produced a map of the island, referred as Map No. L.U.D.1, from an overlay of the Arlidge Map, giving details of lands to be terraced according to Arlidge, their present use, and their ownership, i.e. whether they are Crown Lands, or in private ownership. A copy of the map was sent to the Rural Development Unit. As reported by Walsh, a large percentage of the land to be terraced is found to be under sugarcane, tea, or forestry and does not need terracing, and also the bulk of the programme has to be carried out on privately owned land.

20.16 Officers of the World Bank paid a routine visit of inspection in October to review the progress of the Rural Development Programme. They attended a meeting at Reduit on 18th October, under the chairmanship of Acting Chief Agricultural Officer. The bench terracing project was the main topic of discussion. It was found to be facing a serious problem of scarcity of unused Crownlands for carrying out the programme. Mr. Schumacher, Head of the World Bank Mission, suggested that in case the bench terracing project would be held up, alternative projects would have to be proposed whereby the unspent balance of the sum allocated for the project could be properly utilized. Mr. Hawoldar, Project Manager of the Rural Development Unit found scope for the introduction of legislation on land preservation in the way enforced in many countries.

COWS AT THE CAROL VILLAGE

20.17 This Ministry delivered 24 cows and 24 bull calves to the Ministry of Economic Planning in August 1973 for distribution to 24 cowkeepers at Carol Village. The cowkeepers were grouped into a Cooperative Society known as the Nandini Cooperative Society, and an agreement was signed between the Cooperative Society and the Ministry of Agriculture. The agreement stipulated that the cows and bulls were given on the bases of one cow and one bull calf to each member, for the purpose of maintaining the cow for the production of milk, for home consumption and for sale, and for raising the bull calf for sale for slaughter or resale.

20.18 In 1974, 1 cow was advised sale for slaughter, 1 cow and 1 bull were burnt in accidental fire. These 2 cows were replaced by the Ministry.

20.19 20 acres of elephant grass and 5 acres of Accacia had been planted at the village for the benefit of the cowkeepers.

20.20 The Livestock Extension Officer has been paying regular visits to Carol and has worked in close collaboration with the Village Development Officer of the locality. A lecture on Artificial Insemination and Animal Husbandry was given to the cowkeepers, followed by a slide show; a visit to Palmar Livestock Breeding Station was organised as well, for their benefit. The lecture, the tour and the regular visits of the Extension Officer would no doubt contribute to a better management of the cows, and the timely detection of heat. Arrangements were also made for the weighing of a certain number of bulls, before they could be authorized for sale.

XXI. Engineering Division

HEAD OF DIVISION: A. R. SATAR, PRINCIPAL AGRICULTURAL ENGINEER

Central Workshop

21.1 The servicing, maintenance and repairs of all vehicles, tractors and machinery of the Agricultural Services were carried out at the workshop. Complete service records were kept.

21.2 The following servicing and repairs were carried out:

Vehicles	...	...	850
Tractors	...	...	145
Lawn mowers	...	...	58
Sprayers	...	...	43
Trailers	...	...	47
Pumps	...	...	28
Agricultural implements	...	...	59
Other machinery	...	...	40
Other minor works	...	...	175
TOTAL			1,445

21.3 The following were assembled and installed:

- 3 Livestock weighing machines
- 1 cane derinder
- 1 "Halco" Drilling Rig
- 1 Mobile Slurry Tanker

21.4 The following were manufactured:

- 1 Mobile Molasses Tanker
- 1 Cane Chipper of 2 tons/hr capacity
- 2 Portable Ponding Frames for Northern Plain Irrigation Project
- Burglar proofs structures for Barkly Experiment Station
- Milk Laboratory and Poultry Breeding Station
- Fencing Ports for Northern Plain Irrigation Pilot Project
- Canopies for Barkly Experiment Station, Rodrigues and lorries.

Buildings

21.5 Work on the conversion of the offices and store of the Chinese Rice Mission at Belle Vue into living quarters and the construction of implement shed and stores started in December.

Planning, Design and Advisory Service

21.6 The following architectural plans were prepared:

Office and store for Livestock Breeding Station

Extension of Reduit Head Quarters

Working Drawings were prepared for a water storage reservoir at Palmar Livestock Breeding Station and a Molasses R. C. Tank at Richelieu Experiment Station.

21.7 Bench Terracing at Salazie was designed and the execution of the work was being carried out by the Development Works Corporation.

21.8 Overhead Irrigation systems for the Small Scale Irrigation Scheme were designed.

21.9 Technical advice was given to other divisions and private planters. The construction of the Feedlot at Richelieu Experiment Station was supervised by the Agricultural Engineer.

21.10 Lectures on Agricultural Engineering were delivered at the School of Agriculture of the University of Mauritius.

XXII. Field Services

HEAD OF DIVISION H. M. I. FAKIM—AGRICULTURAL SUPERINTENDENT

22.01 The division as presently organized comprised three branches:—

(a) Land Settlement

(b) Transport Branch

(c) Livestock Feed Factory

LAND SETTLEMENT

22.02 There are in all eleven settlements under the control of this Ministry. They are situated at Petit Sable, Grand Sable, Crown Land Belle Vue, Richelieu, Terre Rouge, Palmar (Palmar Extension), Crownland the Vale, Plaisance, Bee Manique, Buffer Zone and Papavert.

22.03 There are 680 tenants in all the settlements and the number of holdings is 754. The area of each holding varies from 0.25A to 4 Arpents. Terre-Rouge and Richelieu settlements are supplied with irrigation water.

22.04 There has been no meeting of the Land Settlement Committee during the year under review. Rent collection has been satisfactory and a large number of arrears also has been recovered. Several tenants were prosecuted for non-payments of rent. The tenants cultivate their holdings satisfactorily, they are always advised by the officers of the Extension Service. As usual foodcrops and vegetables are cultivated on all settlements; but tenants have a tendency to cultivate their holdings with sugarcane; however the policy to restrict sugarcane and to promote other agricultural diversification was maintained.

TRANSPORT SECTION

22.05 All the vehicles of this Ministry are under the responsibility of this Ministry. There are in all 75 vehicles comprising 43 jeeps, cars and Land Rovers, 14 Lorries and 18 tractors. Repairs of these vehicles are attended to by the Engineering Division of the Ministry. Lorries cater for the transport of stores, manure and animal feedstuffs to all stations. Tractors are used for local transport and for land preparation. Jeep, Land Rovers and cars are used for conveyance of Officers, Experts, Field Staffs and for collection of paysheets.

LIVESTOCK FEED FACTORY

Manufacture of Animal Foodstuff

22.06 During the year under review some 4,023 tons of different feed mixtures were manufactured from various ingredients both imported and local. The products used for these feedstuffs are: Wheatbran, maize-flour, groundnut cake, cotton seed cake, pollard, meat meal, fish meal, oats, lucerne meal, trelocovite, molasses, rawsugar, bonemeal, dicalcium phosphate and several vitamins and premix mixtures.

22.07 Thirteen different kinds of feedstuffs are manufactured for sale, to the public and to Government Stations. These products are:

1. Chick Feed
2. Poultry Feed
3. Pig Grower Feed
4. Creep Feed
5. Pig Starter Feed
6. Cow Feed
7. Modified Cow Feed
8. Special Horse Feed
9. Horse Feed
10. Calf Feed
11. Bull Feed
12. Rabbit Feed
13. Mineral Mixture

22.08 Some 4,001.4 tons of different feedstuffs were sold at the Livestock Feed Factory at Richelieu and Rose Hill Extension Livestock Feed Shop during the year.

LOCAL MAIZE

22.09 Some 9.286 tons of Local Maize were bought from planters at a special subsidy price to encourage production.

22.10 The feed factory on the whole has had a good performance throughout 1974.

XXIII. Rodrigues

OFFICER IN CHARGE: J. F. KWET ON, SENIOR TECHNICAL OFFICER

23.1 Year 1974 was dramatically characterised by the prevailing drought which was one of the worst in the history of the island. Its effect on plantations, water supply and livestock was disastrous. About half of the livestock population of each category died. Production of local foodstuffs was almost nil and Relief Work saved the population from starvation. The same number of Relief Workers was employed as during the previous year. In general, a marked drop in the export of local produce to Mauritius was registered.

23.2 Development work in the fields of Land Development and water supply proceeded unhampered by the drought, whilst not much could be done on re-forestation and pasture development.

23.3 Compared to year 1973, there was no change in the technical staff which consisted of two Senior Technical Officers, one ex-IVS Volunteer who continued his service on contract and seventeen overseers.

23.4 The following specialist officers paid visits to the island:

Messrs. J. Monty, D.S.O. (Entomology)

M. Ramtohul, S.O. (Horticulture)

L. Owadally, D.S.O. (Agronomy)

S. Belcourt, D.S.O. (Chemistry)

Their reports and advice were much appreciated.

23.5 It was realized by the Agricultural department and the local administration that a great effort would be required during the main crop of 1974 to increase the supply of maize in order to reduce the dependence on imported rice and flour.

23.6 To this end the following steps were taken:

(1) Just before the planting season, all the development workers on the terracing sites were released for a couple of weeks to prepare their own land in readiness to plant maize. During their release, they were assisted by W.F.P. food commodities. Farm Inspections were frequently made to ensure that the maximum quantity of Land possible was prepared for planting.

(2) The Agricultural department held fertilizer distributions at which fertilizers were given free to planters. Agricultural officers were present at these distributions to explain the correct methods of fertilizer use and answer any questions. However, the expected wet season (December/January/February) did not appear. The Island had no cyclone—but no rain either.

23.7 The main maize crop for 1974 was reduced to about $\frac{1}{4}$ of its normal acreage. Only the planters on the higher and wetter parts of the island managed to get a crop—a poor crop. Since then, the situation has become only worse. Each time a few wet days were experienced, maize was planted but not enough rain would fall to allow the crop to come to maturity. This stunted growth was fed to animals.

23.8 From this time, January 1974, it can be said that no maize crop was harvested.

23.9 By about July 1974, the water supply was critical. The river-fed supplies were the first to dry up, by December 1974, many sources were also dry.

23.10 The lack of piped water has had its greatest effect on the onion production in Rodrigues (the main cash crop), which fell from 632 tons in 1973 to 31 tons in 1974.

23.11 At seeding time, the onion beds must be watered twice a day. In 1974, about the normal acreage of onions was seeded, but the lack of piped water caused large losses in the seed bed and just after transplanting.

23.12 The onions successfully transplanted were subject to very dry conditions, and produced only second grade bulbs.

23.13 In addition the very dry conditions favoured the onion thrip which did a very great deal of damage.

23.14 The Forest Department has had to contend with unusually high losses of young recently transplanted trees.

23.15 There is little or no vegetable cover on the hill slopes, the soil has been baked to a dry powder. This has made the land extremely susceptible to erosion by water. It can be seen, that even the occasional light rain we are getting is causing erosion on the bare land.

23.16 Should a cyclone hit Rodrigues in its present condition the loss of soil would be enormous.

CAPITAL PROJECTS

31-4-6—*Land Development*

W.F.P. Project MAR/682/04

23.17 This W.F.P. Project is now in its third year. W.F.P. assistance in the form of food payment to the labour working on the project has been pledged for a total of 5 years. The workers on the project receive W.F.P. foodstuffs to a value of approximately half their wages, the Government of Mauritius paying the other half in cash.

23.18 Development workers employed on similar works receive a cash wage of Rs 6.10 per day. Those working on project MAR/682/04 receive 2.250 kg maize plus 0.2 kg dried skim milk plus 0.1 kg edible oil plus Rs 3.66 per day. The cash value of the food ration, plus the Rs 3.66, now exceeds Rs 6.10, due to the rapid rise in the cost of foodstuffs since the value of the food ration was originally calculated.

23.19 During year 1974, terracing work has been carried out on five main sites—one site per agricultural section.

<i>Namely: Site</i>	<i>Section</i>
Jardin Mamzelle/Le Chou	Citronnelle
Palissade/Ste. Famille	St. Gabriel
Saponaire	Trefles
Reposoir	La Ferme
Mangues	Marechal

23.20 The estimated total area terraced during this year is around 400 arpents

23.21 This project employed 239,641 men-days of labour this year, which can be broken down as follows:

Terracing approx.	730,000 ft	223,208 men/days
Main drain approx	90,000 ft	13,205 men/days
*Other Works		3,288 men/days
TOTAL		239,641 men/days

31-4-10—*Development of Farm Water Supply*

23.22 Both Graviers and Anse Raffin Rock Fill dams have reached spill way heights, 40 ft and 35 ft respectively, the spill ways having been cast and the upstream faces waterproofed with cement slabs.

*This includes such works as making or repairing access roads, planting trees at wind-breaks, the draining and reclamation of marshy land at Mourouque, etc.

23.23 Construction of a new small dam was started to collect water from Bassin Banane springs. Water from the dam will eventually be stored in a 50,000 gallon capacity reservoir lower down at Montagne Cabri, from where it will be supplied to the regions of Baie de l'Est, St. François, and Saponnaire by gravity.

23.24 The earth reservoir of 800,000 gallon capacity at Graviers has been completed. The water is being used for irrigation in that area.

23.25 A 5 ft high weir has been built at Jamblon in order to supplement the supply from La Bonte to Port-Mathurin and Oyster-Bay. The weir at La Bonté has completely rebuilt, the former construction being unworthy of water storage.

23.26 Silt deposited by Cyclone Beatrice was removed from the following dams:

Saint D'Or, Reposior, La Bonté, Cygangué, Champs and Cascade Pigeon.

23.27 The following new pipelines have been laid:

3 inch	...	...	22,500 ft
2 inch	...	...	4,700 ft
1 inch	...	...	3,000 ft

23.28 40 miles of agricultural roads rendered inaccessible by Cyclone Beatrice were repaired and 5 miles of new tracks built to new Dam Site.

31-4-11—*Livestock Breeding Centres*

23.29 Construction of a new sow maternity building 66' x 25' was started at Marechal. This will provide accommodation for ten additional farrowing sows.

31-4-13—*Pasture Development*

23.30 40 arpents of pasture land was ploughed and planted with mixed varieties of grass at St. Gabriel Livestock Breeding Station.

31-4-14—*Re-afforestation*

23.31 New plantations were carried out on 81 arpents. Replanting was done on 31 arpents. Weeding on already established plantations was done on 231 arpents.

EXTENSION

Plant Propagation

23.32 6,000 ripe limes were purchased and the seeds extracted for production of seedlings. 12,000 lime seedlings were sold to the public.

23.33 50 orange grafts were produced on Rough Lemon Stocks, and sold to the public.

23.34 A very good mango harvest was recorded. Seeds were collected in large quantities and sowed in agricultural nurseries. 3,000 seedlings were issued free to the public.

23.35 500 rooted mulberry cuttings were sold to the public.

A.Y.C. Clubs

23.36 There are now 9 Agricultural Youth Clubs in Rodrigues, which are regularly visited by the Agricultural Staff. Their activities have been very limited by the prevailing drought.

Production and Marketing

23.37 The following were exported to Mauritius:

<i>Cattle</i>		<i>Pigs</i>	<i>Sheep</i>	<i>Goats</i>
408 heads		2322 heads	1249 heads	1769 heads
<i>Onions</i>	<i>Fowls</i>	<i>Salted Fish</i>		<i>Dried Octopus</i>
31 tons	755 crates of 48 heads	1436 bales of 150 lbs		1055 bales of 150 lbs

23.38 The approximate values of the exports were:

408 cattle at Rs 1,400 per head	...	571,200
2,322 pigs at Rs 250 per head	...	580,500
3,018 sheep / goats at Rs 150 per head	...	452,700
31 tons onions at Rs 1,150 per ton	...	35,650
755 crates fowls at Rs 600 per crate	...	453,000
1,436 bales salted fish at Rs 350 per bale	...	502,600
1,055 bales Dried Octopus at Rs 450 per bale	...	474,750
		3,070,400

ANIMAL STATISTICS

23.39 Balances at 31.12.74

Cattle :

<i>Station</i>	<i>Adults</i>		<i>Young</i>		<i>Total</i>
	<i>male</i>	<i>female</i>	<i>male</i>	<i>female</i>	
Batatan ...	1	12	7	11	31
Oyster Bay ...	6	9	8	8	31
St. Gabriel ...	6	9	11	33	59
Maréchal ...	2	12	7	17	38
Bay Topaz ...	1	19	7	4	31
TOTAL	16	61	40	73	190

Cattle

23.40 There were 89 calvings producing 56 male and 33 female calves. 2 heifers and 22 bull calves were sold to farmers. Deaths due to severe drought conditions totalled 11 male adults, 71 female adults, 44 male young and 37 female young.

23.41 *Pigs*

Station	Adults		Young		Total
	male	female	male	female	
St. Gabriel ...	6	18	56	45	125
Maréchal ...	5	9	12	20	46
Bav Topaz ...	2	14	41	37	94
TOTAL ...	13	41	109	102	265

23.42 There were 53 farrowings producing 337 piglets or 6.3 per litter, with 84.6 per cent survival to weaning age. 228 piglets were sold to farmers.

23.43 11 old and sterile sows were sold by auction.

23.44 *Sheep*

Station	Adults		Young		Total
	male	female	male	female	
Crab Island ...	4	58	19	44	135
Oyster Bay ...	—	—	—	—	—

23.45 81 lambs were born. 28 rams and 3 ewe lambs were sold to farmers as Breeding Stock. Death totalled 6 males and 11 females, mainly due to old age.

23.46 The flock of sheep which was at Oyster Bay did not thrive, apparently on account of lack of fodder and was transferred back to Crab Island. Now, they have regained their former health and form.

23.47...*Goats*

	Adults		Young		Totals
	Male	Female	Male	Female	
St. Gabriel ...	1	19	8	3	31

APPENDIX I

Staff

(AS AT 31ST DECEMBER, 1974)

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Permanent Secretary ...	L. Purmessur, B.Sc. Econ. (London)	
Chief Agricultural Officer ...	B. D. N. Roy, B.Sc. (Wales), Dip. Agric. (Mtius.)	
Veterinary Adviser ...	J. D. Shuja, O.B.E., M.R.C.V.S.	On contract
Principal Agricultural Officer (2)	K. Lutchmeenaraidoo, B.Sc. Agric. (Reading), Dip. Agric. (Mtius.) R. J. S. Moutia, D.Phil. (Gauhati) B.Sc. Hort. (London), Dip. Agric. Economics (Oxford), City and Guilds (Sugar Manu- facture) 1st Class Cert. (London), Dip. Agric. (Mtius.)	

ADMINISTRATIVE AND FINANCE DIVISIONS

Administrative Officer (3) ...	R. M. Hurdoward, B.A. (Hons.) (East Africa), D.P.A.M. (Mtius.) A. I. Oozeerally S. Fowdar, B.A. (Hons.) (Delhi)	
Principal Finance Officer ...	S. P. R. D. D. Davy	
Senior Executive Officer (1)		Vacant

In addition there were:—

- 6 Higher Executive Officer
- 9 Executive Officers
- 2 Higher Clerical Officers
- 34 Clerical Officers
- 103 Clerical Assistants
- 1 Senior Stores Officers
- 1 Assistant Stores Officer
- 3 Stores Assistants
- 3 Confidential Assistants
- 17 Typists
- 1 Head Office Attendant
- 16 Office Attendants

Paid from the
Vote of the
Ministry of
Finance

APPENDIX I—*continued*

AGRICULTURAL DIVISION

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Divisional Scientific Officer (Agronomy)	A. L. Owadally, Ph. D. Agric. (Nottingham), B.Sc. (Hons.) Agric. Botany (Wales.), Dip Agric. (Mtius.)	
Scientific Officer Agro- nomy)(9)	K. Ramdaursingh, B.Sc. (Hons.) Agric. & A. H. (Uttar Pradesh), Dip. Agric. (Mtius.) J. R. N. Govinden, B.Sc. (Agric.) (Hons.) (Crop Science) (Uni. of Ibadan) S. N. Naidu, B. Sc. (Hons.) Agric. and Dip. Agric. (Uni. of Mtius.) P. P. Vyapoory, B. Sc. (Agric.) and Dip. Agric. (Uni. of Mauritius)	1 posted to the Extension Ser- vices Division 4 vacancies
Scientific Officer (Horticul- ture) (3)	I. Rajkomar, B.Sc. (Hons.) Agric. (Udaipur) M. Ramtohul, B.Sc. (Hons.) Agric. & A. H. (Uttar Pradesh) 1 vacancy	

ANIMAL PRODUCTION DIVISION

Divisional Scientific Officer (Animal Husbandry)	J. A. C. Delaitre, B. Agric. (New Zealand)	
Scientific Officer (Animal Husbandry) (4)	B. Hulman, B.Sc. Agric. (Allahabad) G. Naidoo, B.V.Sc. (India) L. K. Mapoon, B.Sc. (Hons.) Agric. (Ife, Nigeria) 1 vacancy	

In addition there were:—

- 3 Technical Officers
(Agriculture)
- 2 Livestock Assistants
- 2 Field Assistants

APPENDIX I—*continued*

PLANT PATHOLOGY DIVISION

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Divisional Scientific Officer (Plant Pathology)	G. N. Lallmahomed, Post graduate Cert. in Nematology (Wageningen), B.Sc. (Hons.) Agric. Biology (Ibadan), Dip. Agric. (Mtius.)	
Scientific Officer (Plant Pathology) (3)	J. Bucha, B.Sc. (General) (Auckland) M. Pillay, B.Sc. (Hons.) Botany (Uni. of Delhi) 1 vacancy	

In addition there were:—

- 4 Technical Officers (Scientific)
- 7 Laboratory Attendants

AGRICULTURAL CHEMISTRY DIVISION

Divisional Scientific Officer (Agricultural Chemistry)	S. Belcourt, Post graduate Diploma Agric. Sc. (Wales), B.Sc. Agric. Chem. (Wales), Dip. Agric. (Mtius.)
Divisional Scientific Officer (Dairy)	J. E. Pablot, B.Sc. General (London)
Scientific Officer (Agricultural Chemistry) (3)	L. C. Lam Thuon Mine, B.Sc. Chemistry (London) P. Mardamootoo, M.Sc. Chemistry, B.Sc. (Hons.) Chemistry (Delhi University) 1 vacancy

In addition there were:—

- 7 Technical Officers (Scientific)
- 1 Field Assistant
- 7 Laboratory Attendants

APPENDIX I—*continued*

ENTOMOLOGY DIVISION

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Divisional Scientific Officer (Entomology)	M. J. L. Monty, B.Sc. (Hons.) Entomology (Queensland), Dip. Agric. (Mtius.)	
Scientific Officer (Entomology) (3)	A. Joomaye, B.Sc. (Hons.) Zoology & Botany (East Africa) M. Ramsamy, B.Sc. General (London) 1 vacancy	On study leave

In addition there were:—

- 3 Technical Officers (Scientific)
- 2 Field Assistants
- 6 Laboratory Attendants

EXPERIMENTAL STATIONS

Agricultural Superintendent	S. Y. E. Doornun
Senior Technical Officer (Agriculture) (5)	A. A. M. Osman, Dip. Agric. (Mtius.) A. C. Chan Hing Chong, Dip. Agric. (Mtius.) A. C. Gouges, Dip. Agric. (Mtius.) I. H. Sassa, Dip. Agric. (Mtius.) Y. L. Kong Ting Lun, Dip. Agric. (Mtius.)

In addition there were:—

- 6 Technical Officers (Agriculture)
- 9 Field Assistants
- 18 Agricultural Overseers
- 2 Livestock Assistants
- 11 Agricultural Assistants
- 1 Laboratory Attendant

APPENDIX I—*continued*

LIVESTOCK BREEDING STATION

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Agricultural Superintendent	J. J. A. Ferrière Y. Aumjaud, Dip. Agric. (Mtius.)	
Senior Technical Officer (Agric.)	A. Pooloo, Dip. Agric. (University of Mtius.) M. Gövendasamy, Dip. Agric. (Uni. of Mtius.)	

In addition there were:—

- 3 Technical officers (Agriculture)
- 1 Field Assistant
- 3 Agricultural Overseers
- 7 Livestock Assistants
- 7 Agricultural Assistants

EXTENSION SERVICE DIVISION

Divisional Scientific Officer (Agriculture)	L. R. Brunet, Dip. Agric. Extension (Queensland), B.Sc. Agric. (Reading). Dip. Agric. (Mtius.)
Scientific Officer (Agronomy)	S. P. Mauree, B.Sc. Agric. (Madras)
Agricultural Superintendent	M. Sooltangos, Dip. Agric. (Mtius.)
Senior Technical Officer (Agriculture) (9) ...	J. C. Honglin, Dip. Agric. (Mtius.) M. F. Jeerooburkhan, Dip. Agric. (Mtius.) M. John Chuan, Dip. Agric. (Mtius.) M. Goolamhossen, Dip. Agric. (Mtius.) J. C. Appapoulay, Dip Agric. (Mtius.) M. Teeluck, Dip. Agric. (Mtius.) R. Gohabar, B.Sc. Agric. (Sind.)

APPENDIX I—*continued**Appointment**Name**Remarks*

In addition there were:—

13 Technical Officers (Agriculture)

14 Field Assistants

6 Agricultural Assistants

1 Publicity Assistant

ANIMAL HEALTH DIVISION

Principal Veterinary Officer M. F. Mosaheb, M. Sc. Tropical Veterinary Science (Queensland), B.V.Sc. and A.H. (Punjab)

Veterinary Officer (3) ... R.C.S. Fokeer, B.V.Sc. & B.Sc. Animal Husbandry (Bombay)

S. Z. Heetun, D.V.M. (West Pakistan Agricultural University)

L. L. Beeharry, B.V.Sc. & A.H. (Uttar Pradesh)

Laboratory Technologists (2) L. H. R. Maurice, Dip. Agric. (Mtius.)
1 vacancy

Senior Technical Officer L. R. Pascal
(Livestock) (2) C. A. Adelson

Senior Technical Officer
(Agriculture) (1) Temporarily vacant

In addition there were:—

12 Technical Officer (Livestock) 4 vacancies

3 Technical Officers (Scientific)

1 Field Assistant

20 Livestock Assistants

1 Agricultural Overseer

4 Laboratory Attendants

APPENDIX I—*continued*

PROJECTS IMPLEMENTATION DIVISION

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Divisional Scientific Officer (Agriculture)	T. M. Narain, M.Sc. Agric. Extension (Reading), B.Sc. Agric. (Reading), Diploma Agric. (Mtius.)	
Agricultural Superintendent	B. Nundloll	

In addition there were:—

- 1 Surveyor
- 1 Junior Surveyor
- 1 Surveyor Assistant
- 1 Junior Draughtsman
- 1 Printing Machine Operator
- 1 Field Assistant

FIELD SERVICES DIVISION

Agricultural Superintendent	M. I. Fakim, Dip. Agric. (Mtius.)	
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In addition there were:—

- 6 Senior Technical Officers
(Scientific)
- 3 Agricultural Overseers
- 1 Laboratory Attendant

ENGINEERING DIVISION

Agricultural Engineer (2) ...	A. R. Satar, B.Sc. Agric. Engineering (Israel), M.I. Agric. Engineering Dip. Agric. (Mtius.). 1 vacancy	
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Assistant Agricultural Engineer	M. Morad, Dip. Agric. (Mtius.)	
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In addition there were:—

- 1 Technical Officer (Agriculture)
- 1 Field Assistant

LAND USE DIVISION

Divisional Scientific Officer (Agriculture)		Vacant
Agricultural Superintendent	C. S. Amide, Dip. Agric. (Mauritius)	

APPENDIX I—*continued*

ARBITRATION AND CONTROL BOARD

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Registrar ...	... A. A. Aumeerally, B.Sc. Sugar Engineering & B.Sc. Chemical Engineering (Louisiana State University), Dip. Agric. (Mtius.)	
Assistant Registrar and Chief Chemist		Vacant
Accountant ...	...	Vacant
Chemist ...	... I. D. Nawoor, B.Sc. General (Wales) B.Sc. (Hons.) Chem. (Wales)	
Assistant Chemist	... R. Thelemaque, Dip. Agric. (Mtius.)	
Statistician (1) ...	...	Vacant
Area Superintendents (4) ...	...	Vacant
Finance Officer (1) ...	...	Vacant
In addition there were:—		
	2 Investigaional Officers and Weighbridge Inspectors.	
	2 Investigational Officers	
	7 Senior Technical Officers (Sugar)	Vacant
	14 Technical Officers (Sugar)	9 vacancies
	21 Senior Technical Assistants	Vacant
	42 Technical Assistants	13 vacancies
	1 Technical Assistant for Crop Season	Vacant
	2 Laboratory Attendants	
	Punch Room Supervisor	Vacant
	Punch/Verifier Operators	Vacant
	Telephone Attendant	Vacant
	Executive Officer	
	Shorthand Writer—Senior	
	Confidential Assistant	Vacant
	Clerical Officer (2)	1 vacancy
	Confidential Assistant (1)	
Divisional Scientific Officer (Agric.)	P. Oogarah, B. Agric. Sc. (New Zealand), Dip. Agric. (Mtius.)	

APPENDIX II

Composition of Principal Boards and Committees

(i) BOARD OF AGRICULTURE, FISHERIES AND NATURAL RESOURCES

The Permanent Secretary, Ministry of Agriculture and Natural Resources—
Chairman

The Conservator of Forests—*Vice-Chairman*

The Deputy Financial Secretary

Members of the Legislative Assembly

The Honourable M. Fakira, M.L.A.

The Honourable R. Deveinne, M.L.A.

The Honourable G. Teelock, M.L.A.

The Honourable C. Roussety, M.L.A.

Representatives of Millers

Mr. Serge Dupont de Rivaltz de Saint Antoine

Mr. Robert Antoine

Representatives of Planters

Mr. Roland Ducler des Rauches

Mr. Balloo Boolakee

Representative of the Chamber of Agriculture

Mr. L. H. Garthwaite

(ii) CANE PLANTERS AND MILLERS ARBITRATION AND CONTROL BOARD

Mr. L. E. Venchard, Q.C.—*Chairman*

Permanent Secretary, Ministry of Agriculture and Natural Resources and the
Environment—Representative of the Minister of Agriculture and Natural
Resources and the Environment

Mr. Currim Currimjee—Independent Member

Mr. Theo Maigrot	}	Representatives of Millers
Mr. Serge Staub		

Mr. B. Ramphul —Representative of planters cultivating canes on
30 arpents or more land

Mr. L. Mungar —Representative of planters cultivating canes on less
than 30 arpents

Mr. R. Seeruttun —Representative of planters who are members of credit
cooperative societies

APPENDIX II—*continued*

(iii) TOBACCO BOARD

A Principal Agricultural Officer—*Chairman*

The Commissioner of Excises—*Vice-Chairman*

The General Manager of the Board

The General Manager, British American Tobacco (Mauritius) Limited or his representative

The Managing Director, Amalgamated Tobacco Corporation (Mauritius) Limited or his representative

Mr. M. I. C. Gunness

Mr. Soomaroo Butan

Mr. A. Georges Rey

Mr. Aneerood Purgass

Mr. Oomar Maudarbaccus

Mr. D. Gungadeen

Mr. I. N. Roy

Mr. Beewa Mahadoo

(iv) LAND SETTLEMENT COMMITTEE

The Chief Agricultural Officer or his representative—*Chairman*

The Divisional Scientific Officer (Extension)

A representative of the Ministry of Housing, Lands and Town and Country Planning

The Principal Assistant Secretary, Ministry of Cooperatives and Cooperative Development

The Officer in Charge of Land Settlement

Nr. Nundlall Gunpath

Mr. S. Jogoo

Honourable G. Teelock, M.L.A.

(v) TEA CONTROL BOARD

Ex-Officer Members

The Permanent Secretary, Ministry of Agriculture and Natural Resources and the Environment or his representative—*Chairman*

The Financial Secretary or his representative

The Registrar of Cooperative Societies

Members appointed by the Minister

Mr. A. R. L. Harrdy Representative of the Chamber of Agriculture

Mr. L. Ramdin, M.B.E. }
Mr. L. P. de Maroussem } Representatives of Manufactures

Mr. F. North Coombes }
Mr. H. Bissessur } Representatives of Planters

Mr. H. R. K. Aubdool }
Mr. V. Govinden, M.B.E. } Three other persons.

Mr. D. Gungadeen }

APPENDIX II—*continued*

(vi) SUGAR MILLERS REHABILITATION FUND COMMITTEE

Government Officers

The Principal Assistant Secretary, Ministry of Agriculture and Natural Resources and the Environment—*Chairman*

The Registrar, Cane Planters and Millers Arbitration and Control Board

Nominated by the Mauritius Chamber of Agriculture

Mr. A. Pierre Dalais

Mr. Pierre Dinan

Mr. J. L. Edouard Rouillard

Mr. E. P. G. White

(vii) SUGAR INDUSTRY REHABILITATION FUND COMMITTEE

Government Officers

The Principal Assistant Secretary, Ministry of Agriculture and Natural Resources and the Environment—*Chairman*

The Registrar, Cane Planters and Millers Arbitration and Control Board

Nominated by the Mauritius Chamber of Agriculture

Mr. A. Pierre Dalais

Mr. Jaynarain Dhowtall

Mr. Cyril Lagesse

Mr. J. M. Antoine Harel

Mr. E.P. G. White

(viii) SUGAR PLANTERS' REHABILITATION FUND COMMITTEE

Government Officers

The Permanent Secretary, Ministry of Agriculture and Natural Resources and the Environment or his representative—*Chairman*

The Registrar of Cooperative Societies or his representative

Representative of the Mauritius Chamber of Agriculture

Mr. Ikbal Roy

Representative of the Mauritius Sugar Cane Planters Association

Mr. Sookun Gaya, O.B.E.

Representative of the Mauritius Cane Growers Association

Mr. Rajman Prayag

Representatives of the Mauritius Cooperative Agricultural Federation Limited

Mr. Nundlall Basant Rai

Mr. Jagdeo Roodurmun, M.B.E.

APPENDIX II—*continued*

(ix) SUGAR MILLERS DEVELOPMENT FUND COMMITTEE

A representative of the Minister of Agriculture and Natural Resources and the Environment—*Chairman*

A representative of the Minister of Finance

Mr. A. Pierre Dalais

Mr. Cyril Lagesse

Mr. J. L. Edouard Rouillard

Mr. E. P. G. White

(x) SUGAR PLANTERS DEVELOPMENT FUND COMMITTEE

A representative of the Minister of Agriculture and Natural Resources and the Environment—*Chairman*

A representative of the Minister of Finance

A representative of the Minister of Cooperatives and Cooperative Development

A representative of the Minister of Economic Planning and Development

Mr. Seegobin Bunjun

Mr. Coonjeeharry Dwarkasingh

Mr. Raffic Osman

Mr. Jugdeo Roodurmun, M.B.E.

Mr. Hansraj Ruhee

(xi) SUGAR INDUSTRY DEVELOPMENT FUND COMMITTEE

A representative of the Minister of Agriculture and Natural Resources and the Environment—*Chairman*

A representative of the Minister of Finance

Mr. Ghunraz Beeharry

Mr. Cyril Lagesse

Mr. Raffic Osman

Mr. R. Seeruttun

Mr. E. P. G. White

(xii) SUGAR PLANTERS MECHANICAL POOL CORPORATION BOARD

A representative of the Minister of Agriculture and Natural Resources and the Environment—*Chairman*

A representative of the Minister of Finance

A representative of the Sugar Planters Development Fund

Mr. Ramkurrunsingh Balgobin

Mr. Nundlall Basant Rai

Mr. Sookun Gaya, O.B.E.

Mr. Gervais Mamet

APPENDIX II—*continued*

(xiii) TEA DEVELOPMENT AUTHORITY

Mr. R. Jeewoolall—*Chairman*

The Permanent Secretary, Ministry of Agriculture and Natural Resources and the Environment, or his representative—*Vice-Chairman*

The Principal Agricultural Officer (representing the Ministry of Agriculture and Natural Resources and the Environment)

The Registrar of Cooperative Societies

The Chairman of the Tea Control Board

Mr. S. Laloo (representing the Ministry of Finance)

Mr. L. Ramdin, M.B.E. (representing the Chamber of Agriculture)

Mr. D. Gungah (representing the Federation of Credit and Tea Marketing Cooperative Societies)

Mr. P. White

(xiv) AGRICULTURAL MARKETING BOARD

Mr. T. Callychurn—*Chairman*

The Chief Agricultural Officer (representing the Ministry of Agriculture and Natural Resources and the Environment)—*Vice-Chairman*

Official Members

The Financial Secretary or his representative (representing the Ministry of Finance)

The Principal Assistant Secretary, Ministry of Commerce and Industry or his representative (representing the Ministry of Commerce and Industry)

The Registrar of Cooperative Societies or his representative

Unofficial Members

Mr. L. Ramdin, M.B.E.

Mr. S. J. S. Fareed

Mr. G. Kooraram

Mr. E. Appanah

Mr. P. Maureemootoo

Mr. M. K. Ng Wong Hing

Mr. K. C. Ramgoolam

APPENDIX III

Legislation*Acts*

No. 4 of 1974	...	The Sugar Insurance Fund Act 1974.
No. 7 of 1974	...	Mauritius Veterinary Association Act.
No. 12 of 1974	...	The Pesticides Control (Amendment) Act 1974.
No. 37 of 1974	...	The Rose Belle Sugar Estate Board (Amendment) Act 1974.
No. 44 of 1974	...	The Cane Planters and Millers Arbitration and Control Board (Amendment) Act.
No. 45 of 1974	...	The Sugar Insurance Fund Act 1974.
No. 46 of 1974	...	The Sugar Planters Mechanical Pool Corporation Act 1974.
No. 47 of 1974	...	The Sugar Industry Labour Welfare Fund Act 1974.
No. 48 of 1974	...	The Sugar Millers (Levy of Duty) Act 1974.
No. 54 of 1974	...	The Meat Act 1974.
No. 62 of 1974	...	The Sack Factory (Repeal) Act 1974.

*Government**Notices*

No. 1	...	Registered Dogs (Issues of discs).
No. 10	...	The Cyclone and Drought Insurance Fund Rules 1974.
No. 67	...	Sugar Export Duty Order 1974
No. 122	...	Mauritius Agricultural Marketing (Standard of Quality and classification) (Amendment) Regulations.
No. 123	...	Mauritius Agricultural Marketing (Price and Quantities) Order.
No. 127	...	Slaughter of cattle—Regulations.
No. 128	...	Slaughter of cattle Restriction Regulations.
No. 145	...	Cattle and Beef (Slaughter and Sale) Regulations 1974
No. 157	...	Mauritius Agricultural Marketing (Additional payment of Price) Order.

APPENDIX IV

List of Publications and Contributions to Literature by Officers
of the Agricultural Services during 1974

<i>Name of Author</i>	<i>Title of Paper</i>	<i>Name, Vol. No. Page Nos. of Periodical in which published</i>
J. Monty	Teratological effects of the virus Rhabdionvirus Oryctes on Oryctesrhinoceros (L) (Coleoptera Dynastidae)	Bulletin of Entomological Research, 64 (4): 633-636

APPENDIX V

Conversion Table

1 Arpent	...	...	1.043 acres
1 Gaulette	...	...	10.61 feet
1 Metric Ton	...	...	1,000 kilos
1 Long Ton	...	...	1,016 kilos
1 Pound Avoirdupois	...	...	454 grams
1 Kilo	...	...	1,000 grams
1 Hundredweight	...	...	50.803 kilos
1 Imperial Gallon	...	...	4.45 litres
1 Rupee	...	...	7.5 pence
1 Cord	...	...	92.82 cubic feet

